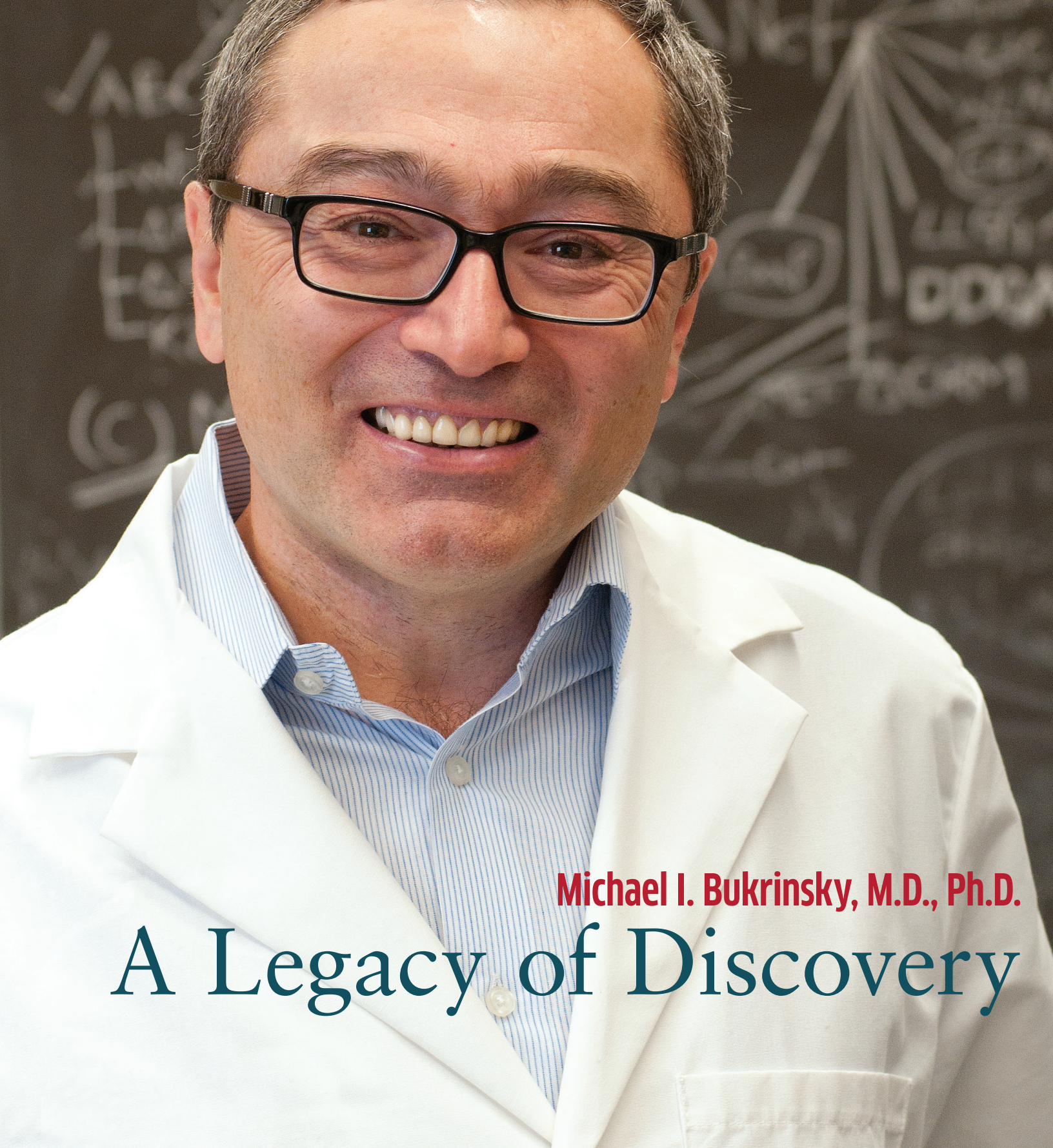


SPRING 2012

Medicine + Health

THE GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE AND HEALTH SCIENCES



Michael I. Bukrinsky, M.D., Ph.D.

A Legacy of Discovery



Building a Community of Knowledge and Skill

It has been said that the most important thing that we do as a university is create alumni who graduate with their new knowledge and skills prepared to make a difference in the world.

The GW School of Medicine and Health Sciences (SMHS) has generated thousands of outstanding and influential physicians, health professionals, and scientists who have touched millions of lives and thousands of communities.

Over the past several months, I have been honored to meet with our Medicine and Health Sciences alumni in multiple cities across the country. Without question, the most common thing I hear from our alumni is that they believe they were better prepared than their non-GW peers as they embarked upon their health careers. Our alumni are remarkably proud of GW and grateful for the education, training, and opportunities afforded to them.

SMHS alumni are eager to rattle off the names of their classmates who are accomplishing great things. Our alumni are internationally recognized for their cutting-edge basic science and clinical research, their advanced clinical practices, their leadership in professional and scientific societies, their service to their communities and commitment to philanthropy, and their reputations as distinguished physicians and health professionals.

Our alumni have discovered new treatments and medical devices, made important contributions to medical and scientific literature, influenced legislation and health policy, and led complex organizations. They are a valuable resource for the communities in which they live and work, for each other, as well as for our current and future students.

These achievements and contributions are central to the overall reputation of SMHS. We look to our alumni to serve as a built-in community of outstanding role models and mentors for our students. We also ask our alumni to contribute to the advancement of our school and society.

Please email (smhsalumni@email.gwu.edu) and keep us informed of your current projects, employment, appointments, and latest accomplishments. Your classmates, the GW medical community, and I want to hear about the great things you are doing.

Best wishes,

A handwritten signature in dark ink, appearing to read 'Jeff Akman', with a long horizontal line extending to the right.

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Match Madness



Raphael Karkowsky, a fourth-year medical student in the George Washington University School of Medicine and Health Sciences (SMHS), wasn't sure if it was nerves or just a sugar rush from brunch. Whatever it was, he knew his heartbeat was picking up its pace.

Like thousands of other fourth-year medical students across the country, including his twin brother at the University of Maryland School of Medicine, Karkowski was anticipating what many call the most pivotal moment of their medical education: Match Day.

Held on March 16 this year, nearly 16,000 medical students nationwide simultaneously received and opened envelopes from the National Residency Matching Program revealing the institution where they will be spending at least the next three years of their professional lives. At GW, students, faculty, family, and friends all gathered in Ross Hall to celebrate the occasion.

"You matched at some incredible places across the United States of America — including the George Washington University," said Yolanda Haywood, M.D., assistant dean for Student and Curricular Affairs and associate professor of Emergency Medicine at SMHS, at the ceremony.

When the clock struck noon, the students — who were dressed in t-shirts and accessories signifying their intended specialty — tore into their envelopes. Cheers, tears, and champagne toasts ensued.

Across the room, Karkowsky, who matched to an internal medicine residency at Thomas Jefferson University, tried to reach his twin brother William. "I'm really happy," he said. His brother matched in internal medicine at the University of Chicago.

Overall, SMHS students matched with many of the leading institutions across the country, including Einstein/Beth Israel Medical Center in New York City, the University of Chicago Medical Center, Massachusetts General Hospital in Boston, and the Baylor College of Medicine in Houston. Fourteen students will continue their training here at GW.

To see the complete list of this year's SMHS Match Day schools, visit www.gwumc.edu/matchday2012. ■

A Day of Service

Rather than spending the day before residency Match Day pacing, nail-biting, and going over last-minute "what-if" scenarios, a group of fourth-year GW medical students redirected that pre-match nervous energy back into the community.

More than 60 budding physicians helped to renovate what might become a safe house for Washington, D.C. residents in need, during the Gold Humanism Honor Society's (GHHS) Annual Day of Service, on March 15.

"Each year, GHHS members vote on how they'd like to spend their day of service," explained Rahul Vanjani, a GHHS member. "This year, we chose something that we believed characterized our class and the type of project we wanted to pursue: a focus on the underserved and the integration of GW into the D.C. community."

The event, organized by GHHS and open to all fourth-year medical students, linked GW students with Temporary Emergency Residential Resource Institute for Families in Crisis (TERRIFIC, Inc.), a non-profit housing and human service organization serving families in crisis. GW volunteers spent the day painting the interior of a three-story house as part of a renovation project.

A highlight of the day, according to Joanie Brumbaugh, a GHHS member and Day of Service organizer, came when the founder of TERRIFIC, Inc. visited the GW team on site. "She was moved to tears and thanked us for providing a service that her organization couldn't afford," said Brumbaugh. "She was so excited about the potential of that house to be a place of refuge and hope." ■

A Voice for Medical Students

MICHAEL LEONG



While her classmates were anxiously waiting during the Match Day countdown March 17, Elizabeth Wiley, J.D., M.P.H., a fourth-year medical student at the George Washington University School of Medicine and Health Sciences (SMHS), was touring Ghana, where she served as a delegate at the 61st General Assembly March Meeting of the International Federation of Medical Students' Associations.

But Wiley was just as nervous as her peers back in the United States. She too was awaiting big news about her future, specifically, whether or not she had been

elected to serve as the national president of the American Medical Student Association (AMSA), the nation's oldest and largest independent association for physicians-in-training.

"When the election results were announced, I was elated — and relieved!" said Wiley, who will delay residency for a year during her term as president. "It's an honor to lead an exceptional organization that inspires a community of future physicians through education and advocacy."

Wiley is the first GW student to hold this position — a full-time job that involves chairing AMSA's Board of Trustees, maintaining alliances with other organizations, and visiting AMSA chapters around the country — but it's GW that Wiley credits for priming her for the responsibility.

"Throughout medical school, I've had unparalleled opportunities to integrate my passion for health policy and advocacy into my training," she said. Through SMHS's track in Health Policy, Wiley even worked with professors Fitzhugh Mul-lan, M.D., M.P.H., Murdock Head Professor of Medicine and Health Policy, and Candice Chen, M.D., M.P.H., assistant research professor of Health Policy, in GW's School of Public Health and Health Services, to draft legislative language that ended up in the Patient Protection and Affordable Care Act.

"I don't think any other medical student in the country is able to say that," said Wiley. "And it's thanks to GW that I had that opportunity."

Throughout her term, Wiley hopes to advocate for increased access to health care for all Americans, address the growing problem of student debt, and bring more political awareness to HIV/AIDS and reproductive justice.

"I want to be a voice for medical students in the upcoming election and on Capitol Hill," she said. ■

"Throughout medical school, I've had unparalleled opportunities to integrate my passion for health policy and advocacy into my training."

Elizabeth Wiley, J.D., M.P.H

The Marriage of Medicine and Machine

Already one of the largest robotic surgery programs in the country, the George Washington University Hospital (GW Hospital) is taking steps to become the regional leader among multi-specialty robotic observation centers. With the addition of two new robots, GW Hospital is the first in the Washington/Baltimore area offering daVinci Si robots with dual console capability and fluorescence imaging and skills simulation for surgical training.

Paired with the dual console system, two surgeons are able to collaborate during a procedure and exchange control of the instrument arms and endoscope. The console also features built-in intercoms to facilitate communications between surgeons while both are seated at consoles.

"The advantages of robot-assisted surgery are significant," says Thomas W. Jarrett, professor of Urology at the School of Medicine and Health Sciences, and chair of the Department of Urology at the GW Medical Faculty Associates. "Incisions are smaller, patients may experience less pain, they often do not need strong narcotic pain medication, and they can resume their normal daily activities in about half the time as they can with traditional surgery."

In 2004, GW Hospital became the first in the area to have the daVinci system. Since then, GW surgeons have performed more than 2,500 robotic procedures. GW's surgical team was the first in the area to use the daVinci for colectomies, and in January, Fredrick Brody, M.D., director of Minimally Invasive Surgery, and Paul Lin, M.D., vice chair of the Department of Surgery and Chief of General and Hepatopancreatic Surgery, performed the region's first robotic-assisted laparoscopic Whipple procedure. ■



An architectural rendering of the new interior space of Ross Hall.

Facilities Improvement to Build a Route Out of Poverty



At the core of the mission of GW's School of Medicine and Health Sciences (SMHS), faculty and physicians strive to improve the health and well-being of the local, national, and global communities. With the aide of a \$15 million grant awarded to SMHS from the National Institutes of Health (NIH) through the American Recovery and Reinvestment Act (ARRA), as well as additional support from the school, GW is embracing this ideal and building a new research center to address Neglected Diseases of Poverty. These diseases, which include Neglected Infections of Poverty and Neglected Tropical Diseases, are illnesses prevalent among the world's poorest and most desperate populations, affecting billions of people, especially children. Often these populations are left too sick to work or go to school — contributing to a perpetual cycle of poverty.

GW's new Research Center for Neglected Diseases of Poverty will be equipped with state-of-the-art laboratories where researchers will be empowered to identify innovative ways to focus on prevention and treatments for people who are afflicted with these diseases. GW's biotechnology capacity will expand through new equipment and increased efficiencies within the lab space, creating more collaborative learning spaces for students, laboratory personnel, and faculty. Additional research will be conducted at the facility to translate basic science discoveries into new products. The Center will provide the space and facilities to enable SMHS to recruit new faculty and staff and expand the mission of the Center.

To accommodate the new center, the fifth and sixth floors of Ross Hall will be fully renovated to provide new laboratory space and an exterior-egress stairwell

will be constructed on the northwest side of the building to provide better access inside Ross Hall and an additional route out of the building. The project will be managed by GW and facilitated in close collaboration with the NIH to meet the requirements of ARRA funding. Clark Construction will implement the work. The project will begin in May 2012 and is slated for completion in the fall of 2013.

Concurrent with the Research Center for Neglected Diseases project there will be upgrades to the Ross Hall central utility plant (CUP). Renovations to the CUP will support Ross Hall infrastructure as well as provide utilities for the Science and Engineering Hall.

For more information about the Ross Hall construction project, visit

www.gwumc.edu/rosshallconstruction. ■

GW Symposium Attracts Global Experts in Thymosins Research

There aren't many researchers in the world who can call themselves experts on Thymosins. The small, naturally occurring proteins that hold diverse biological roles including the stimulation or suppression of the body's immune response were first identified more than 40 years ago, but only now are their powers being fully explored. But among the world's leading scientists investigating thymosins, most were on GW's campus for the Third International Symposium on Thymosins in Health and Disease, March 14–16.

Researchers from Europe, Asia, and North America presented their work on the impact of two thymosins, $\alpha 1$ and $\beta 4$, on cardiovascular disease; neurodegenerative diseases and brain trauma; wound healing; immunomodulation, infectious diseases, and tolerance; cancer; and vaccines.

The symposium was co-hosted by Allan Goldstein, Ph.D., professor and Chair Emeritus, of GW's School of Medicine and Health Sciences Department of Biochemistry and Molecular Biology, and Enrico Garaci, M.D., president of the Istituto Superiore di Sanita and professor of Microbiology at the University of Rome "Tor Vergata."

More than just responsible for launching the international conference, the pair are considered founding members

of the select community of thymosin researchers. In the mid-1960s, Goldstein discovered thymosins, first isolating the hormone-like peptides.

Since then, a synthetic version, Thymosin $\alpha 1$, has been tested in lung cancer patients, used in treatments for hepatitis B and C, and used as therapy to boost immune system responses in patients around the world.

"We still need to define the full therapeutic potential of these thymic peptides and to further define the physiological role of the thymus in health and disease," explained Goldstein.

The three-day conference culminated with the presentation of the 2012 Abraham White Scientific, Humanitarian, and Public Service Awards, honoring three individuals for their unique contributions to science, medicine, and the global community: Deepak Srivastava, M.D., professor of Pediatrics and director of the Gladstone Institute of Cardiovascular Disease; Luigina Romani, M.D., Ph.D., professor of Microbiology at the University of Perugia, Perugia, Italy; and Margaret Stern, chair of The Michael Stern Parkinson's Research Foundation, who received the award on behalf of her father, Michael. ■

From Curiosity to Cure

Rakesh Kumar, Ph.D., Catharine Birch and William McCormick Chair of the department of Biochemistry and Molecular Biology in the George Washington University's School of Medicine and Health Sciences (SMHS), says the aim of his department's Nobel Laureate lecture series "is to bring the best people in the world to Washington, D.C., and to GW."

That lofty goal was achieved in February, when Nobel Laureate Aaron Ciechanover, M.D., Ph.D., traveled from his home in Israel to GW's Foggy Bottom campus to deliver the department's second Nobel Laureate lecture.

Ciechanover won the Nobel Prize in Chemistry in 2004 with two other scientists for describing how proteins

are broken down by cell enzymes. During his lecture, Ciechanover recalled the road to his discovery. When he first started out, he said, "people were mesmerized by transcription," the process by which DNA is converted to RNA. "People didn't care about destruction. They were fascinated with construction."

But Ciechanover wasn't like most people. He was interested in destruction, in particular, the degradation of proteins in cells. "We are replacing every molecule in our body, and yet, we remain the same," he marveled.

Intracellular protein degradation is important for "quality control" issues, Ciechanover explained. In the same way that meat in the refrigerator goes bad, the quality of the protein in our cells diminishes over time. The body

has highly specific processes to replace the poor quality proteins with fresher ones. If these processes are imperfect, it can cause diseases such as cystic fibrosis.

Ciechanover questioned the growing emphasis on translational research, moving basic science discoveries into therapeutics. Although his discovery has since led to the development of drug therapies, such as those used to treat neurodegenerative disorders, Ciechanover said his goal was never therapy-driven.

"The whole thing evolved out of a curiosity to answer an unanswered biological question — not to develop any drug," he said. "I think it's a lesson. It shows you that curiosity leads you to unexpected growth at the end." ■



Translating Research to the Community

From the diagnosis of acute upper gastrointestinal hemorrhage to the epidemiology of dengue fever in St. Lucia, students, faculty, and residents in GW's School of Medicine and Health Sciences tackle not only the most academically interesting subjects in health care, but also the topics with the greatest influence on the health and well-being of people around the world.

These projects and more than 300 others were on display at GW's 17th Annual Health and Medicine Research Day, March 28.

"Health and Medicine Research Day is always an exciting day," said Jeff Akman, M.D., '81, G.M.E. '85, interim vice president for Health Affairs and dean of SMHS, who delivered welcoming remarks at the Jack Morton

"Translational research knits us together as a research community, because translational research is a team sport and it requires people with special skills that really are encompassed across the spectrum of our enterprise."

Lisa Guay-Woodford, M.D.

Auditorium. "It enables us to truly learn about the expanding scientific enterprise that's happening right here within our own institution."

The annual event kicked off with a keynote address delivered by Lisa Guay-Woodford, M.D., director of the Clinical and Translational Science Institute at Children's National Medical Center (see p. 7).

"Translational research knits us together as a research community," she said, "because translational research is a team sport and it requires people with



Following her GW Research Day address, Lisa Guay-Woodford, M.D., director of the Clinical and Translational Science Institute at Children's National Medical Center, at right, toured the poster session area.

special skills that really are encompassed across the spectrum of our enterprise."

During her speech, Guay-Woodford, a pediatric nephrologist, described recent scientific advances in polycystic kidney disease and used the condition as an allegory for successful translational research.

Fifty percent of patients with polycystic kidney disease, a genetic kidney disorder, progress to end-stage renal disease, said Guay-Woodford. One of the goals of her research is to understand why the other half doesn't progress and then to use that knowledge to help prevent disease progression in all patients.

"We are getting close to targeted therapies that will weaken the progression of the disease," she said. "If we could change the natural history of the disease so that no one suffers end-stage renal disease, that would be a major clinical advance."

In the afternoon, the spotlight turned from experienced researchers to aspiring ones, as students presented their projects on posters that filled the Marvin Center. They shared what they've learned with each other and responded to rapid questioning from faculty members who judged their work.

At the award ceremony that followed, winners of the oral competition delivered short presentations about their research. Rakesh Kumar, Ph.D., professor and Catharine Birch and William McCormick Chair of SMHS's Department of Biochemistry, and Jeanny Aragon-Ching, M.D., assistant professor in SMHS's Department of Medicine and a member of the Division of Hematology and Oncology at The GW Medical Faculty Associates, were awarded the 2011 Elaine H. Snyder Cancer Research Award. John N. van den Anker, M.D., Ph.D., professor of Pediatrics and of Pharmacology and Physiology at SMHS received the 2012 Distinguished Researcher Award (see p. 34).

For a complete list of the winners of the oral competition and poster presentations, visit www.gwumc.edu/researchday2012. ■

New Leaders in GW Medicine

The George Washington University School of Medicine and Health Sciences and its partnering institutions the George Washington University Hospital (GW Hospital) and Children's National Medical Center (Children's National), recently added key new personnel to their executive teams.

Lisa Guay-Woodford, M.D., Ph.D., joined Children's National as the new director of the Center for Clinical and Community Research and the Principal Investigator of the Clinical and Translational Science Institute (CTSI). Trained and certified as a pediatric nephrologist, Guay-Woodford will lead the CTSI's mission to speed the development of new treatments by making it easier for basic science discoveries to move from the laboratory to clinical care. The CTSI was formed out of a five-year, \$20 million Clinical and Translational Science Award (CTSA) from the National Institutes of Health. Guay-Woodford comes to Children's National from the University of Alabama at Birmingham (UAB) where she was the principal investigator of UAB's CTSA.

GW Alumnus Barry A. Wolfman, M.S. '84, recently joined GW Hospital to serve as CEO and Managing Director. In his 27-year career in health care, Wolfman has served as a multi-system senior executive, hospital CEO, and medical school board member. His most recent position was with Providence Health & Services as chief executive at Providence Saint Joseph Medical Center in Burbank, Calif.

Dennis Narango was selected as associate dean of the School of Medicine and Health Sciences (SMHS) and associate vice president of GW Medicine Development and Alumni Relations. In his role, Narango leads the development and alumni affairs team in support of SMHS and directs all aspects of fundraising and capital development for GW Medicine. He comes to GW from the University of Maryland School of Medicine where he was the associate dean for development and chief development officer. ■

Digital Transcriptome Discovery Could Lead to Targeted Therapies for Breast Cancer



Researchers in GW's School of Medicine and Health Sciences (SMHS) Department of Biochemistry and Molecular Biology, published a first-of-its-kind study into the use of mRNA sequencing to look at the expression of the genome for three types of breast cancer at an unprecedented resolution. The study, titled "Transcriptomic landscape of breast cancer through mRNA sequencing," was published in the Feb. 14 edition of the journal *Scientific Reports*, a new open access journal from the publishers of *Nature* for large-volume data.

Breast cancer is the leading cause of cancer death among women, accounting for about 23 percent of the total cancer cases and about 14 percent of the cancer deaths worldwide. An obstacle hindering the translation of gene expression research into patient treatments is the highly individualized nature of the disease. One avenue past this roadblock is gaining a deeper insight into the transcriptional regulatory machinery responsible for the cellular changes that result in breast cancer.

The GW team, led by senior author Rakesh Kumar, Ph.D., GW's Catharine Birch and William McCormick Chair of the department of Biochemistry and Molecular Biology, contrasted the gene expression patterns of 17 patients with three different types of breast cancer to identify biologically relevant, therapeutically important, targets in breast cancer. The researchers defined a comprehensive digital transcriptome — RNA molecules found in a population of cells — and performed extensive comparative analysis of the three groups of breast cancer. Their research yielded a staggering 1.2 billion reads at various levels of the transcriptional process.

"For the first time, mRNA sequencing of human breast cancer tissues provides knowledge on central transcriptional regulatory elements, demonstrating unexplored niches that could change the way breast cancer is understood," said lead author Jeyanthi Eswaran, Ph.D., director of GW's McCormick Genomic and Proteomic Center.

While most research today is focused on preselected genes, the GW team used an unbiased approach to come up with an original snapshot of the breast cancer transcriptome. The team is working to gain a better understanding of the fundamental occurrences orchestrating the events that lead to a patient suffering from breast cancer.

"From the ongoing work in the laboratory, it is clear that this study has implications beyond the current digital transcriptome of breast cancer, as the team is actively characterizing novel mutations in protein-coding genes and other elements of human genome that might be relevant in breast cancer," said Kumar. The work, he said, may influence breast cancer genomics, the transcriptional regulation of cancer, and help build new biologic pathways in breast cancer.

For more information about ongoing research in the Department of Biochemistry and Molecular Biology, visit gwumc.edu/smhs/biochemistry/support.html. ■



Faculty Integrate Palliative Care into Geriatrics Education

There's no good reason to fear old age, says Beverly Lunsford, Ph.D., R.N., director of the Center for Aging Health and Humanities in GW's School of Medicine and Health Sciences (SMHS), and associate research professor in the George Washington University School of Nursing (SON).

Older adults live active and vibrant lives, she says. They continue to grow, develop, and seek meaning and purpose in their lives. They are not the sum of their broken parts; they are individuals with potential — and they deserve to be treated as such.

"I want to change people's notion of the older adult from someone who's just a health problem to a person with creative potential," says Lunsford. And thanks to a three-year, \$500,000 grant from the Health Resources and Services Administration (HRSA), she is already working toward this goal.

The award, which is in the final year of its original funding, supports the Geriatric Education Utilizing a Palliative Care Framework (GEPaC) project, a multi-disciplinary effort aimed at increasing access to high-quality geriatric educa-

tion for physicians, nurses, occupational and physical therapists, physician assistants, and other clinicians who provide care for the over-65 crowd — a population that's growing by the second.

"There are gaps between geriatric and palliative care education," says Lunsford. But because most people over the age of 65 are dealing with chronic health conditions, closing those gaps is more critical than ever before.

"The goal is to achieve quality of life that gives the person the opportunity to continue to grow and develop as a person."

Beverly Lunsford, Ph.D., R.N.

Through the GEPaC curriculum, aspiring health care professionals will learn how to manage disease in a way that promotes optimal functioning and a high quality of life. The modules focus on person-centered care, communication, interdisciplinary collaboration, quality of life, and multi-dimensional aspects of aging.

"The goal is not curing," says Lunsford. "The goal is to achieve quality of life that gives the person the opportunity to continue to grow and develop as a person."

Lunsford credits her interdisciplinary team of colleagues — including Philip Blatt, P.T., Ph.D., assistant professor of Health Care Sciences at SMHS; Cheryl Arenella M.D., M.P.H, a cancer education specialist in Virginia; Jacqueline Barnett, M.S.H.S., P.A.-C., assistant professor of Health Care Sciences; Elizabeth Cobbs, M.D., associate professor of Medicine at SMHS; Mary Corcoran, Ph.D., associate dean of Faculty Development for Health Care Sciences at SMHS; Jean Johnson, Ph.D., R.N., dean of SON; Laurie Lyons, instructional designer at SMHS; Laurie Posey, Ed.D., assistant professor at SON; and Paul Tschudi, Ed.S., visiting assistant professor of Health Care Sciences at SMHS — with helping make the project accessible to a wide variety of health professions

Once complete, the collaboration between SON, SMHS, Shenandoah University, and the National Hospice and Palliative Care Organization will implement the project in traditional classroom, online classroom, and online continuing education settings.

"There is a real hunger for geriatrics education," says Lunsford. "If we can teach it from a palliative perspective, we can better manage disease, improve quality of life, support the patient and family, and lower health care costs. It's a win-win situation." ■



A Medical Education Makeover

NEW CURRICULUM REVAMP EMPHASIZES PATIENT CARE

Two years of basic sciences, two years of clinical rotations. That's the standard medical education curriculum, a formula that's been in place for decades in many American medical schools. But just because that's the way it's always been that way doesn't mean it's the way it should be, say members of the New Curriculum Committee at George Washington University School of Medicine and Health Sciences (SMHS).

The group, an ad hoc committee of the school's Curriculum Oversight Group, is taking a close look at the medical education curriculum at SMHS, as well as the curriculum at other medical schools. Based on the committee's feedback and recommendations, a new curriculum will be developed and is on track to be implemented in fall 2014.

"Educating our students to serve as clinicians, researchers, and health policy leaders is a sacred trust," says Alex Stagnaro-Green, M.D., senior associate dean for Education at SMHS and chair of the committee. "The process we are undertaking is both exciting and daunting."

The New Curriculum Committee, which has held weekly meetings since February 2011, comprises medical students, department chairs, residency directors, course and clerkship directors, and others. Ensuring accurate representation was a top priority when forming the group, says Stagnaro-Green.

"We want to make certain that it's a school-wide effort that people feel excited about and vested in because they were active participants in its creation," he says.

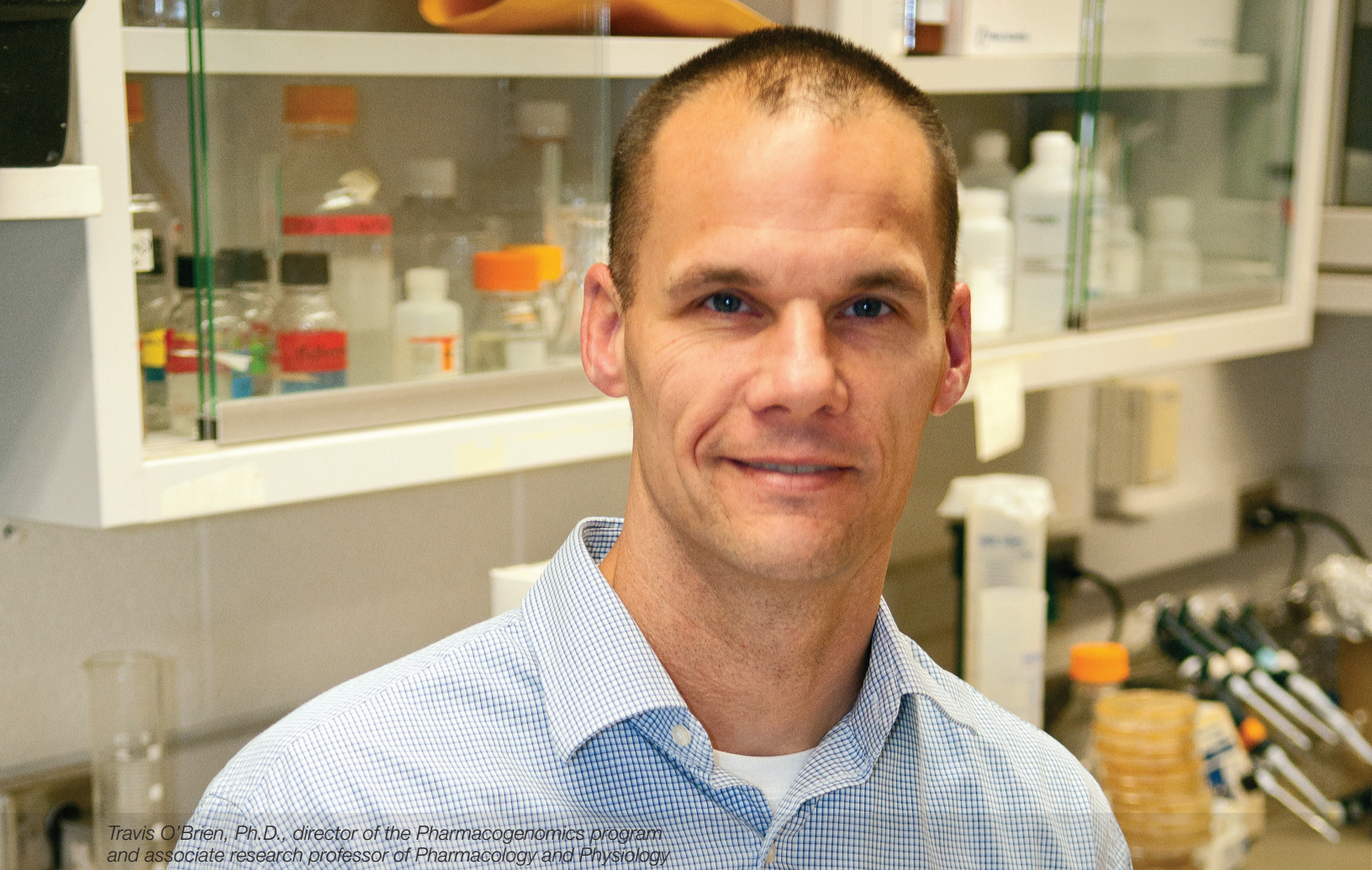
According to Thomas "Bruce" Shaver, a third-year medical student at SMHS who serves on the committee, the approach is working. "The openness and inclusiveness of the process has strengthened my belief that SMHS really is a special place, and I am very excited about the changes that are forthcoming," he says.

One of the committee's first tasks was to identify the guiding principles that would provide a framework for the process. They decided on concepts that include professional growth, taking responsibility, and early clinical exposure. In all, the eight principles form the acronym PATIENTS.

"One of the hallmarks of GW is that we train great clinicians," says Stagnaro-Green. "The acronym PATIENTS is emblematic of our commitment to developing a curriculum that puts the patient first."

But the committee is not afraid to look to other schools for curricular inspiration. They have visited universities both near and far, including The Johns Hopkins University School of Medicine, The New York University School of Medicine, and the Paul L. Foster School of Medicine (PLFSOM) in El Paso. Stagnaro-Green calls PLFSOM a "fascinating" model that uses a symptom-based, not the traditional systems-based, integrated curriculum.

Rather than mimicking any of the other models, the new curriculum will likely feature elements of many. The ultimate goal, says Stagnaro-Green, is to create the best possible curriculum for the next generation of GW-trained physicians. "The new curriculum process will serve to maintain GW as a national leader in medical education," he says. ■



Travis O'Brien, Ph.D., director of the Pharmacogenomics program and associate research professor of Pharmacology and Physiology

THOMAS KOHOUT

Custom Tailoring

GW's Pharmacogenomics Program Explores Fashioning Individualized Drug Therapies



By Steve Goldstein

It wasn't long ago when the idea of tailoring drug therapy based on a patient's genetic makeup, or distinguishing which drug might be most effective in battling a person's cancer would be relegated to the pages of a science fiction novel. But today, it's called science. Real science. Pharmacogenomics (PGx) to be exact. The marriage of pharmacology and genetics is a union that spawns research aimed at personalizing drug therapies and being able to predict drug responses based on a patient's genetic makeup.

In addition to reducing life-threatening adverse reactions to drugs, genetic testing itself may also be predictive of treatment failure or success. "All medications will be designer drugs someday," said Travis O'Brien, Ph.D., director of the Pharmacogenomics program and associate research professor of Pharmacology and Physiology in GW's School of Medicine and Health Sciences (SMHS). "PGx will be another tool in the armamentarium in battling disease."

In 2005, in conjunction with Shenandoah University's Bernard J. Dunn School of Pharmacy, SMHS began offering the nation's first bachelor's degree in PGx. Courses are primarily held at the GW campus in Ashburn, Va., and can lead to either a bachelor's degree in Health Science (B.S.H.S.) in Pharmacogenomics or a B.S.H.S./Doctor of Pharmacy (Pharm.D.) dual degree.

O'Brien said the goal of the program is to educate a new generation of Health Sciences graduates "who are acutely aware of the interface between human genetic variability and drug action, as well as the role that genomics can play in identifying biomarkers for disease and targets for therapy."

Students in the program participate in the groundbreaking research led by O'Brien, who received his doctorate in Toxicology from the University of Cincinnati College of Medicine. One study looks at the drug Warfarin, an oral anticoagulant typically given to patients at risk of stroke, deep vein thrombosis, or other types of cardiovascular disease. Though Warfarin

is prescribed millions of times each year, the drug is difficult to manage. It inhibits a key gene that promotes clotting, and it's also deactivated by a liver enzyme. In patients who inherit a genetic variation in that enzyme that slows their metabolisms, Warfarin gets broken down at a slower rate. This variation might cause the drug to stay in the body longer, and increase the chances of negative side effects like bleeding.

O'Brien's research team, which includes April Barbour, M.D., M.P.H., associate professor of Medicine at SMHS, and Arthur Harralson, Pharm.D., of Shenandoah University, focuses on drug metabolism in African Americans. While there are known genes that affect the metabolism of the anti-coagulant Warfarin in Caucasians, those that affect metabolism in minorities are not well-defined, the team explained.

"Warfarin has a narrow therapeutic window and its metabolism is affected by many factors, including genetic variation," said Barbour. "Knowing genetic information helps physicians initially choose the proper dose of Warfarin and then manage patients over time. This has the potential to reduce morbidity and mortality."

"There's probably no other drug in the world that has genetic information that's so well-linked to the dose someone is receiving," O'Brien added.

The study is still in the recruitment phase, which O'Brien expects to complete by year's end. DNA will be collected from study subjects and then isolated and analyzed at the PGx program lab in Ashburn, where the samples will be subjected to DNA sequencing. O'Brien said such research can reduce health care costs "and work as a preventative measure to decrease the incidence of adverse drug reactions associated with Warfarin."

A second area of research is in Reproductive Endocrinology. Along with Paul Gindoff, M.D., professor of Obstetrics and Gynecology at SMHS, and director of GW's Fertility and In Vitro Fertilization (IVF) Center, O'Brien and other researchers are examining genetic biomarkers in different populations to find a model that can predict how women will respond to ovarian stimulation therapy. Virtually all women undergoing fertility treatments receive such therapy; nearly 10 percent of them suffer from moderate to severe Ovarian Hyper Stimulation Syndrome (OHSS), a condition that can lead to complications such as ovarian torsion, ovarian rupture, and thrombophlebitis.

"This model will help patients decide whether they want to undergo the therapy and help physicians decide how to treat patients who respond poorly to it," said O'Brien. A second phase of the research, he said, is a case-control study that examines blood samples from patients who have had OHSS and compares them to those who responded normally. If the latter is found to have a different genotype than those who experienced toxicity, "you could create a simple genetic test that will let a woman know whether she's at risk of overstimulating," O'Brien noted.

Gindoff called the research a potential "grand slam." In the future, he said, predicting who is at risk to develop OHSS "will save a lot of people angst and medical treatment because we can be sure to treat them more appropriately." He added that it might also indirectly increase the success rate of IVF because the procedure could be performed safely in more cases. For example, if someone is overstimulated, many times you can't finish the cycle, so if you can do this more safely then you can finish the treatment and help more people who might not otherwise be helped."

O'Brien is also excited by the prospect of targeting cancer with genetically tailored medications. Since cancers are typically diagnosed with a biopsy, physicians might be able to use those tissue samples to study the DNA of the cells. This technique could lead to selecting a drug and dosage that is most suitable for combating each patient's specific form of cancer.

"All medications will be designer drugs someday. Pharmacogenomics will be another tool in the armamentarium in battling disease."

Travis O'Brien, Ph.D.

"One person's liver cancer is not the same as another's," he said. "With better understanding of these variances, we will be able to treat cancers differently and that's a major area where genetics research will have a big impact."

O'Brien hopes that the PGx program will help to shape how future health care professionals think about and treat their patients. Joseph Bocchino, Ed.D., M.B.A., interim senior associate dean for Health Sciences, said that pharmacogenomics "specifically moves us closer to being able to treat a patient as an individual human being, as opposed to taking the results from a clinical trial with 5,000 subjects and treating an entire universe of people."

Currently, the innovative program has 16 students. But Bocchino suspects it will expand. "If I was talking to a high school graduate, I would say that this program offers multiple pathways to science, the retail pharmacy business and industry, and it offers a seamless route to a Pharm.D. degree," he said.

For years, physicians have spoken about providing personalized medicine, but the reality was mainly restricted to diet, age, lifestyle, and health status. O'Brien believes that Pharmacogenomics has the potential to truly realize the promise of the field. "It's the ability to take genetic information and apply it to patient care," he said, "which ultimately will lead to better health care overall."

For more information about Pharmacogenomics research and GW's Pharmacogenomics degree program, visit gwumc.edu/pharma. ■

RETIRED FACULTY MEMBERS DRAW
ON DECADES OF EXPERIENCE TO
TEACH THE PRINCIPLES OF PRACTICE

The Art of Healing

By Thomas Kobout

Sesum Moosavi, a third-year medical student in the George Washington University School of Medicine and Health Sciences (SMHS), enters the dimly lit hospital room. He introduces himself and briefly explains what he is there to do.

The patient is a heavy-set, African American male in his mid-40s complaining of dizziness, slight abdominal discomfort, and dark urine.

Moosavi begins the examination by taking the patient's medical history, as Robert Wilkinson, M.D., M.A.C.P., professor emeritus of Clinical Medicine, a Board Certified Internist with nearly 50 years of experience under his belt, sits quietly observing Moosavi's interaction, his forward-leaning posture, eye contact, and his relaxed but methodical line of questions. Wilkinson takes notes as the student asks a series of questions aimed at developing a differential diagnosis. When Moosavi indicates he has completed the history, Wilkinson asks a few additional questions for clarification before the student moves on. Wilkinson makes notes on a 40-point checklist as Moosavi continues on to the physical exam, checking the patient's pulse, inspecting his eyes for jaundice and observing their pupillary reflex, and then continues through the steps to an efficient physical exam.

Gently tapping on the upper body, Moosavi listens carefully to the quality of the sound his fingers make. The difference in tone — resonant or hyper-resonant, flat or dull — tells a physician a great deal about the underlying structure. Dullness could indicate an underlying collection of fluid or possibly a mass.

Moosavi next guides firm but careful fingers over the patient's abdomen, probing the stomach



and tracing the outline of the liver to get a sense of his condition. At the end, Moosavi glances over at Wilkinson as if to ask, “Well, how did I do? Did I leave out anything?”

The two chat briefly with the patient, each thanking him for his time, and then retire to debrief in an empty lounge, where the real learning begins.

TEACHING THE HEALING TOUCH

For nearly 20 years, a small band of retired SMHS clinicians like Wilkinson have been working to hold the line on hands-on care, ensuring that the doctors trained at GW know as much about the art of healing as they do about the science of medicine.

Since the early 1990s, every third-year medical student has taken Observed History and Physical Examination, a two-hour assessment of what Sir William Osler, the Canadian physician credited with first leading medical students out of the lecture hall and into the exam rooms, once called the “principles of practice.”

The course was developed by Stanley J. Talpers, M.D., a long-time clinician with the George Washington Medical Faculty Associates and former SMHS faculty member. After teaching in the Practice of Medicine (POM) program for about 15 years, former chair of the Department of Medicine George Rios, M.D., urged Talpers to launch a different type of

program. Together they developed a course to offer third-year medical students an individualized critique of their examination and patient history skills.

Today, Talpers and eight fellow physicians — mostly former internists and all with some current or former GW affiliation — offer up decades of bedside exam experience during extensive evaluation sessions.

THE DEBRIEFING

Following Moosavi's examination, he and Wilkinson sit down to discuss how things went. After reviewing the proper use of the ophthalmoscope and the appearance of the fundus, Wilkinson suggests Moosavi and a classmate visit the exam rooms at the Clinical Learning and Simulation Skills Center — GW's hands-on clinical educational environment. Then they discuss the patient, whom Wilkinson had handpicked earlier that day, asking the patient if he would be willing to participate in the teaching exercise and determining whether his case would be suitable for Moosavi's history and examination.

"I thought Moosavi did quite well," says Wilkinson. "When the patient didn't want to go into details about his mental health history, the student didn't press him or get confrontational. Ultimately he developed such a good rapport that the patient disclosed his mental health status anyway."

TEACHING THE SKILLS

Each year, some 180 third-year medical students take this rite of passage as they move through the Department of Medicine during their clinical rotations. They have already covered the skills required to take a patient history and give a physical exam during their first two years of POM. But often by the time students advance to their rotations something has gotten lost.

What Talpers calls the "skill of touch" is the point where medicine leaves the scientific arena and moves into the world of art. "That art is fading," he says. Those skills have diminished in value as access to high-tech testing equipment becomes more commonplace. When students begin their rotations, they're often left dazzled by that technology, and it's hard for them to recall those basic skills they've learned as well as their value.

"The generation I came out of had little technology," recalls Talpers. "When I was a young doctor we relied heavily on physical diagnosis; that was an important part of a careful examination."

Ironically, through the SMHS POM program and the Observed History and Physical Examination course, Talpers believes that today GW might actually be doing a better job of teaching these skills than

ever before. When he was a young medical student, Talpers' examination training came mostly through observing residents and doctors performing exams. "We're teaching that now over the first two years," he says. "We teach it very well and make it stick. That's what this course is about — making those skills stick."

An important part of this program, says Wilkinson, is that it's not graded. "I explain that this is purely for their benefit. The students genuinely like the program, not just because they aren't graded, but also because they are getting feedback from us. If they do something wrong in the physical examination we say, 'wait, why don't you try doing that this way.'"

Following the exam, physicians and students sit down to go over the procedure. They discuss how things went and explore ways to move beyond any tricky parts. Students, says Talpers, listen carefully when they're critiqued. "We are giving them something invaluable, that one-on-one time and immediate feedback. That's precious."

Many students ask if they can do it over, say Talpers and Wilkinson, and some have suggested each student get a chance to take the course at the start of third-year rotations and again at the end. Unfortunately, there aren't enough physicians to critique all of the students twice. In fact, time is a large part of why the course is led by retired or semi-retired physicians. Between the exam and the critique, physicians spend at least two hours with each student.

LASTING INFLUENCE

Wilkinson and Talpers agree that the goal of this program is not to move clinical practice back to a 19th century mindset. Modern diagnostics are crucial in the treatment of serious illnesses. But, they add, a physician armed with good examination skills can pinpoint most illnesses just as effectively, possibly faster, and certainly more efficiently than blindly ordering a battery of tests.

"If we could influence our students in these two hours, instilling these good habits and developing the skills that have become part of doctoring for a very long time," says Talpers, "they could do a better job diagnosing their patients and getting the right answer the first time." ■

"We are giving them something invaluable, that one-on-one time and immediate feedback. That's precious."

Stanley J. Talpers, M.D.

Building Sudan on the Run

They were running, running. In the morning light, the only sounds were heavy breathing and the rhythmic flap-flap-flap of worn-down sandals as the tribesmen clicked through the scrub atop the hard baked Sudanese laterite. Some giggled as they followed the white man. “Why is this crazy *khawaja* using up all our energy? Why run unless someone is chasing you?”
But they kept running.



Glenn Geelhoed, M.D.



Glenn Geelhoed, M.D., greets patients waiting outside a rural clinic.

Glenn Geelhoed, M.D. — surgeon, medical missionary, marathoner, proselytizer of peace — has indeed been called crazy. His latest plan — to unite the warring tribes of South Sudan around a marathon team to compete in the London Olympic Games this summer — was seen by some as wishfulness bordering on fantasy.

But Geelhoed, or Doc G as he's known in the bush, has defied doubts and exceeded expectations before. Indeed, he's made a career of it, spending more than 40 years leading medical missions to the most poverty-stricken, desperately underserved regions of the world. In addition to ministering to the poorest of the poor, he's trained generations of young doctors while establishing clinics in remote locations from Southern Sudan to the Philippines to Haiti.

Geelhoed holds the unique distinction of being the only five-time GW alumnus, earning advanced degrees from four of the university's 10 schools. He came to GW's School of Medicine and Health Sciences in 1975, and now holds professorships in Surgery, International Medical Education, and Microbiology and Tropical Medicine. But his OR is the world. He's received the American College of Surgeons' 2009 Volunteerism Award for International Outreach, the 2008 Safari Club's International Humanitarian Service Award, and, in 2005, was inducted into the Medical Mission Hall of Fame.

But the latest mission? Let's just say it's made Geelhoed acutely familiar with the old Yiddish saying, "Man makes plans, and God laughs." Still, progress has been made and the dream lives on. There's another saying Geelhoed prefers: "A

journey of a thousand miles begins with a single step."

The former colony of Sudan gained independence from the British in 1956, but has known little peace since; two civil wars have killed millions and displaced millions more. In 1983, the military regime attempted to impose Islamic law, triggering a separatist rebellion in the south of the country, home to a third of the population who hold Christian or animist beliefs. War raged for more than 20 years until a peace agreement was signed in 2005. But the Comprehensive Peace Accord did not quell the strife and the missions led by Geelhoed, who first came to South Sudan in 2005, have been marked by conflict, including cattle and bride raids, kidnappings, and murders.

In January 2011, South Sudan voted overwhelmingly for independence and a new state was formally declared on July 9. Interethnic clashes among the Dinka people (about three million), the Nuer people (about two million), and the Murles (about 400,000) persist, however, thanks to problems like the high rates of infertility among Murle women that motivate their tribe to capture Dinka brides.

Having run more than 100 marathons, with at least one on every continent on the globe, Geelhoed can rightly be called an addict. His lean, compact physique and the sharp planes of his face accentuate his deep-set eyes. Given the endorphin rush that produces a sense of well-being, Geelhoed, who recently turned 70 and who runs wherever he travels, thought that running might serve as a path toward peace and the restoration of health care for an impoverished population. Perhaps sport could be a mechanism to defuse ethnic rivalries, he mused.

As part of a ceasefire agreement he brokered among the warring tribes in early 2010, Geelhoed pledged to deliver a 40-foot shipping container of medical equipment and a team of professionals to outfit clinics and train medics to treat the Murle and Dinka people and hopefully address the infertility issue. But the ceasefire didn't hold. "Why should I talk to you about malaria and TB when your biggest health problem is hostility?" a disappointed Geelhoed told the tribes. "I'm not going to redevelop your health care until hostilities cease." New pledges of peace were renewed. When he returned in January 2011 with the promised supplies, Geelhoed said they would only be distributed if the tribes worked together. As an additional carrot, he promised to rebuild the Lakurnyang

Missionary Hospital in Pibor in Jonglei State in the eastern part of the country.

Meanwhile, Geelhoed continued running. Sometimes, tribesmen joined him. Maybe this could be a natural way to commemorate the Jan. 9 vote approving a new state, he thought, successfully implementing a “Jonglei Freedom Run” in Pibor. More than 400 tribesmen ran some 15 kilometers through the dusty scrub, vying for the honor of beating the *khawaja*. Every African who finished received a medal in the shape of a whistle and 10 Sudanese pounds, or about \$5.

This idea has legs, Geelhoed thought. His next step was planning a “Jonglei Independence Run,” uniting the tribes in a ceremonial jaunt in January 2012 on the anniversary of the vote for secession. Through a connection with famed American marathoner Bill Rodgers, Geelhoed’s plan came to the attention of the organizers of the Los Angeles Marathon. In return for exclusive rights to publicize the Sudanese connection, marathon officials agreed to pay expenses for the winning male and female runners from each tribe in the Independence Run to race in the L.A. Marathon on March 18,

Marathon t-shirts, medals, and spare running shoes, Geelhoed found that hostilities had resumed between the Nuer and the Murle tribes, leaving scores dead. Some Dinka leaders, sensing better odds of going to the United States, wanted to go ahead with the run anyway. No way, said Geelhoed, in his direct, Dutch manner. “I came here for the benefit of all,” he said. “So the race is off, no trip to LaLa Land and maybe no Olympics.” The tribesmen suggested an alternate plan to hold the run this July on the first anniversary of the new state, but the rainy season would flood the racecourse. “There will be no race until it’s an all-tribes race,” Geelhoed declared.

For Geelhoed, who’s worked in Africa for four decades, this is merely a bump in the road. “The most likely scenario is I return to South Sudan in July and the tribes agree to run in the dry season beginning in November and then the winners train in Kenya,” he said. “Then all we have to do is create a National Olympic Committee and prepare for the 2016 Games in Rio de Janeiro, Brazil, by training on a measured course.”



Left, Glenn Geelhoed, M.D., treats a Murle woman just returning from exile. Above, Murle people outside the Lakumyand Clinic waiting to receive treatment.

2012. Geelhoed leapt at the deal. Further discussion yielded a promise to help train the same runners to potentially compete as a South Sudan Olympic Marathon Team at the London Olympics.

So, what happens? God laughs. Returning to South Sudan last December to prepare for the run, bearing 750 L.A.

Mafi mushkila (no problem), as the tribes say.

Geelhoed is convinced that sport can bridge ethnic divides, pointing to the unifying effect of rugby in South Africa and basketball in the Middle East. For him, this is one more mission, and a necessary step on the journey to ending hostilities and restoring health care. “I go out there and see what’s possible,” he said. “Some of the missionaries said they can’t believe I’ve gotten this far. You can go a long way when you’re not concerned with who gets the credit, and my goal is not to leave fingerprints. This is up to them.” ■

When Class Gets Personal

Students examine their genomes in innovative course

Nick Hazen's computer screen stared back at him like a reflection in a funhouse mirror. Laid out in colorful charts, and enhanced through explanatory slides and expert quotations, it's a visage of someone both familiar and unrecognizable.

According to the graphics, Hazen was a 30-year-old blue-eyed man of European descent who could digest lactose. That much he already knew. But he was also described as a person with a low risk for heart disease and an elevated risk for Alzheimer's disease. That bit — and much more — was news.

Hazen, a second-year medical student at the George Washington University School of Medicine and Health Sciences (SMHS), had sent away a swab of his saliva several weeks earlier to 23andMe, a company that analyzes DNA for disease risk, drug resistance, and ancestry. When the results popped into his inbox, his gene-deep journey to self-discovery began.

But unlike most of the company's customers, Hazen's pursuit wasn't motivated by fear, marriage, or a genetic counselor's nudging. Like several dozen other GW medical students, Hazen was preparing for class.

ACADEMIC INNOVATION

Tim McCaffrey, Ph.D., professor of Medicine and director of the Division of Genomic Medicine at SMHS, calls pushing the curricular envelope "academic innovation." He knows his course, "GNMX201: Personalized Genomics: An Exploration into the Heritable Elements of Disease," is unlike any other.

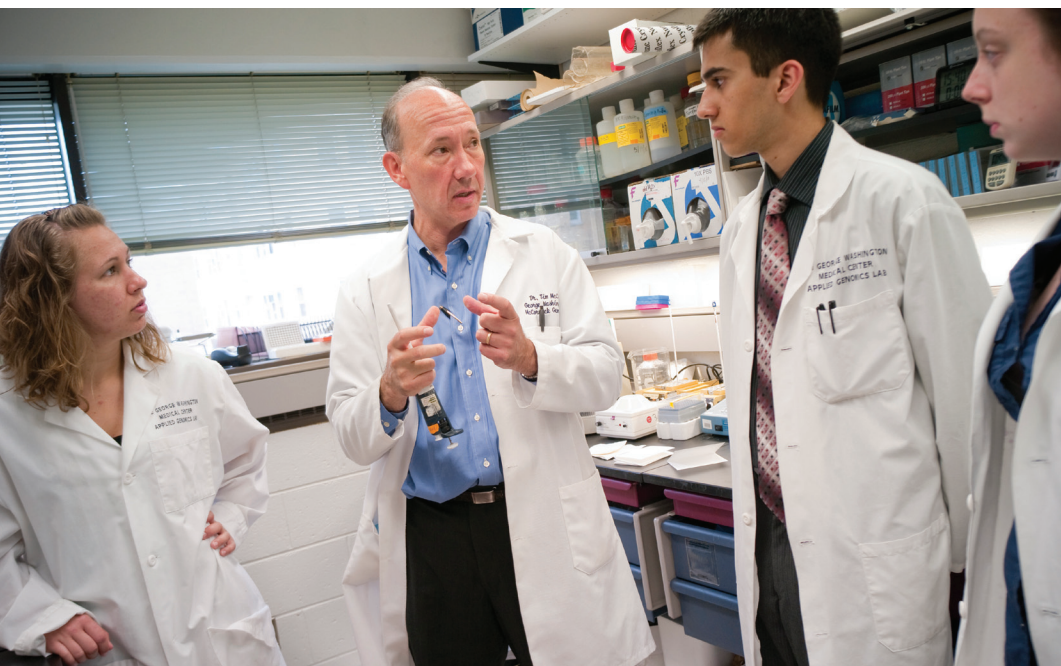
"I've never taught a course like this before; and as a

matter of fact, there are only two or three medical schools around the country that are teaching similar courses," he tells his students during the first lecture. "What's different about it is that it's interactive — you can learn things about yourself that you really couldn't in other types of courses."

That's for sure. The course, which was first offered in the summer of 2011, gives each student the chance to have his or her genetic makeup, or genome, scanned by 23andMe for more than one million variations in DNA called Single Nucleotide Polymorphisms (SNPs). The company compares the individual's outcomes with a database of SNPs to predict the relative likelihood of developing more than 100 diseases. Their results can be viewed by logging into a personalized page on the 23andMe website.

McCaffrey's students can opt to work with an anonymous set of DNA. However, most — if not all — use their own. The program not only reveals personal risk for disease, it also teaches the students about each condition through slides, video explanations, and a physician's perspective. The website is satisfying even "for those of us who are really super wonky," says McCaffrey, because it describes precisely which gene is affected by the variation, where it is located in the genome, and how it's connected with disease. For the skeptical type, 23andMe links to the studies that support its conclusions and updates users' results as new research is released. "It's a hypochondriac's dream," McCaffrey adds.

It's also a professor's dream: the ability to personalize lessons that would otherwise be hypothetical. Using the students' experiences with the program as the backdrop makes class discussions on DNA sequencing, guest lectures



Tim McCaffrey, Ph.D., discusses the implications of personalized genomics.

about the statistical methods behind risk assessment, and readings regarding the ethical, legal, and social issues surrounding genetic analysis all come to life. McCaffrey records each lecture so that his students — some of whom travel internationally pursuing research projects through the Gill Fellowship Program, which awards medical students a summer stipend for conducting research with faculty members — can watch them from around the world or refer to them from their homes.

As the syllabus promises, “By exploring their own genome and heritable disease risk ... the student will become familiar with the terminology, the methods, the proper interpretation, as well as the strengths and weaknesses of this approach. Because patients are now obtaining this information on their own ... this is an eminently practical course that will foster an informed and responsive physician.”

WE ARE ALL SUSPICIOUS

McCaffrey presumes that most students are drawn to his class, an elective, out of curiosity. “Whether we like it or not, we all are suspicious of what we are at risk for,” he says. “Tapping into that curiosity helps us engage students in learning about the genetic contribution to disease.”

For Hazen, whose family has a history of heart attacks and strokes, those suspicions were related to his heart. But 23andMe had different hunches, illustrating a key concept of the course: there’s a difference between family history and heredity.

“Up until now, family history has pretty much been taken as indicative of there being some heritable predisposition involved in a particular disease or condition,” says

McCaffrey. “We know now that a familial risk and genetic inheritance are not identical concepts.”

GNMX201 also stresses the important difference between disease risk and diagnosis. McCaffrey, for example, is more than two times as likely as the average person to develop Crohn’s disease, according to his 23andMe results. But with a risk of 1.2 percent, his chances are still small.

Whether or not an elevated risk progresses into an actual diagnosis depends, to varying degrees, on both nature and nurture. Some diseases, namely Alzheimer’s and Parkinson’s, however, are believed to be almost exclusively nature — so much so that a consumer’s risk for them is guarded by an extra “lock” on 23andMe.

“[Unlocking the information] is a decision you should really think about because as far as we know, there’s almost nothing you can do about [those diseases],” says McCaffrey. “I tell the students ‘don’t do it, don’t look. You have nothing to gain by it. If it’s going to affect you at 50 or 60 years old, why would you want to worry about it now when it might well be cured by then?’”

ACTIONABLE INFORMATION

Fortunately, dead-end information is rare in personalized genomics. Most of what’s gained is “actionable,” says McCaffrey, and can be used to influence behavior change, initiate doctor-patient discussions, or inform medication dosages.

Personalized genomics is, by its very definition, personal. But for students who take GNMX201, its real value is not what they learn about themselves, but what they learn about patient care.

“People are doing this — and they’re doing it without their physicians,” says McCaffrey. “Then, they go to their physician, and the physician doesn’t have a clue what they’re talking about because they were trained 30 years ago. They just don’t know how to deal with it.”

But with the help of courses like McCaffrey’s, the next generation of physicians will know how to deal with it. After all, they will have gone through it themselves.

“This course is not required, and it won’t be on the boards,” says Hazen. “But it’s a perfect example of how GW does a good job preparing us for life after medical school: It’s offered for the purpose of making us better physicians.” ■

By Steve Goldstein | Photography by Michael Leong

A man in a white lab coat and teal trousers is walking from left to right. He is holding a caduceus (a staff with a green snake coiled around it) in his right hand and a stethoscope in his left hand. The background is a dark, textured wall with a spotlight effect on the caduceus. The floor is a dark, textured surface.

A Legacy of Discovery

Some are born scientists, some have science thrust upon them and, in the case of Michael I. Bukrinsky, M.D., Ph.D., some have a family history that conveys a certain inevitability to their life's work. Fortunately for the George Washington University School of Medicine and Health Sciences (SMHS), where Bukrinsky serves as professor and interim chair of the Department of Microbiology, Immunology, and Tropical Medicine, his family was also instrumental in ensuring that his groundbreaking work in HIV biology and drug design was done in the United States and not in his native Russia.



With a research focus on HIV biology and inflammatory diseases, Bukrinsky and his team have been studying cardiovascular disease in HIV-infected patients. In addition to his leadership role in the department, Bukrinsky is one of the senior researchers leading GW's Washington, D.C. Developmental Center for AIDS Research (D.C. D-CFAR), which is charged with providing scientific leadership and institutional infrastructure to promote HIV/AIDS research and to develop the next generation of investigators.

Yet all of this might never have been.

Science is literally in Bukrinsky's DNA. His father, Ilya Shapiro, was a prominent biologist and his mother a virologist. When they weren't working at their labs, his parents poured over difficult-to-obtain scientific journals, which were in short supply in the Cold War-era Communist Soviet Union. "I saw them reading all the time and they seemed happy and excited," recalled Bukrinsky, "so by age 10 or 11, I had decided that I was going to be a scientist, too." His parents sent him to Moscow School No. 2, the top mathematics school in the city, whose director would later be persecuted by the Soviet authorities for allowing too much free speech. Later, Bukrinsky would attend Moscow Medical School and earn his Ph.D. at the prestigious Institute of Molecular Biology.

Meanwhile, in 1978, Shapiro defected to the West to escape the Soviet Union's restrictive working conditions for scientists. With his father branded a traitor, young Michael took his mother's maiden name — Bukrinsky. (Augmenting his scientific pedigree, Bukrinsky's mother later married Viktor Zhdanov, a famous Russian virologist and Deputy Minister of Health in the USSR, who led the effort to eradicate the smallpox virus.) By the mid-1980s, Bukrinsky began to relate to his father's frustration. "I rose to 'interim junior researcher,' " he said with a laugh. "It was a joke; I had no real position." The final straw came when Soviet authorities rejected an invitation for Bukrinsky to visit Cuba to address the nation's growing HIV problem.

In 1989, the last year Jewish people were allowed to emigrate from the Soviet Union, Bukrinsky received an official invitation to leave, thanks to his father's friend in Israel. Ultimately, Bukrinsky went to the United States; his mother would follow three years later, after the dissolution of the USSR. "I left because I wasn't allowed to move to any position where I could do something in research," he explained.

Shapiro was also instrumental in matching his son with leading HIV researcher Mario Stevenson, Ph.D., at the University of Nebraska in Omaha. It was a good fit: Bukrinsky stayed for three years and the lab published numerous papers in top journals. "This was the time my future interests were formed," said Bukrinsky. Then fate took another turn when he met Anthony Cerami, Ph.D., who was head of a research institute at North Shore University Hospital on Long Island, N.Y.

"We had decided to expand the scope of our research to include HIV and, after calling people in the field, we identified a young investigator named Michael Bukrinsky," said Cerami, a distinguished researcher who pioneered the hemoglobin A1c test used by diabetics worldwide and founded the Warren Institute, a not-for-profit that conducts biomedical research. "I worked with Michael on several aspects of HIV and enjoyed every moment. He is without a doubt one of the leaders in the field today," said Cerami.

The two became close friends and when Bukrinsky expressed a desire to find a new position, Cerami endorsed GW, which was actively expanding its Department of Microbiology, Immunology, and Tropical Medicine. In 2001, Bukrinsky arrived on campus and, in a short time, according to his peers, managed to rise to the top of a highly competitive HIV/AIDS field. He's also become an admired mentor, training doctoral students who have gone on to some of the best laboratories in the world. One of them, Sergey Iordanskiy, Ph.D., was a postdoc from 2001 through 2007 and now continues to collaborate with Bukrinsky as a member of the research faculty at GW. "Michael is a fantastic mentor and scientific adviser who allows us to work almost independently.

He always considers the opinions of young scientists and guides them in the right direction when problems arise,” said Iordanskiy.

Bukrinsky’s lab has focused on, among other projects, analyzing cholesterol metabolism in HIV-infected cells to understand why people with HIV are at increased risk of arteriosclerosis. As anti-retroviral drug regimens have allowed HIV patients to live longer, a clinical problem has arisen because they are developing arteriosclerosis at an earlier age than the general population. At first, Bukrinsky said, experts thought that the increased risk was related to the drugs, but that theory was proved false. “In fact, tests showed that when taken off drugs, the risk actually went up — not down,” said Bukrinsky. “That’s when we came in with our project.”



MICHAEL LEONG

Bukrinsky’s team discovered that the HIV virus has a specific effect on cholesterol metabolism by inhibiting a critical cholesterol transporting mechanism. Specifically, the HIV virus suppresses cholesterol efflux, which is critical for maturation of the high-density lipoprotein (HDL) particles, the key atheroprotective factor in blood. The HDL particles perform two functions: anti-inflammation and prevention of plaque formation in the arteries. But HIV patients have low levels of HDL, explains Bukrinsky.

Once the role of HDL in arteriosclerosis was discovered, pharmaceutical companies went to work on drugs that stimulate the transportation of cholesterol. Bukrinsky’s team capitalized on these developments, finding that the same drugs also inhibit viral replication. “This suggests that these drugs will be of dual benefit to the patients — they will not only fight arteriosclerosis but they’ll also inhibit replication of the HIV virus. This is really very exciting,” Bukrinsky said.

Alan Remaley, M.D., Ph.D., a well-known HIV expert at the National Institutes of Health, said Bukrinsky’s work on the role of cholesterol and lipid metabolism in AIDS “holds great promise” regarding the effect of some HIV drugs on lipid and lipoprotein metabolism. He also praised

Bukrinsky’s finding that the replication of HIV itself is in-part dependent upon cholesterol metabolism. The viral effect on cholesterol metabolism and trafficking has been observed in other viruses, suggesting that it can be used as a target for therapeutic approaches against HIV as well as other viruses. “This creates the opportunity to perhaps control the replication of HIV,” said Remaley. As a result of these observations, Bukrinsky is cited as an author on more than 10 U.S. patents.

With 2011 marking the 30th anniversary of the battle against HIV/AIDS, Bukrinsky’s work comes amid other breakthroughs such as the discovery that an HIV-infected individual can reduce the risk of sexual transmission by beginning anti-retroviral drug treatment sooner. Other successful interventions have helped prevent HIV-infected mothers from transmitting the virus to their children during birth. All are steps toward what the Obama administration calls an “AIDS-free generation.”

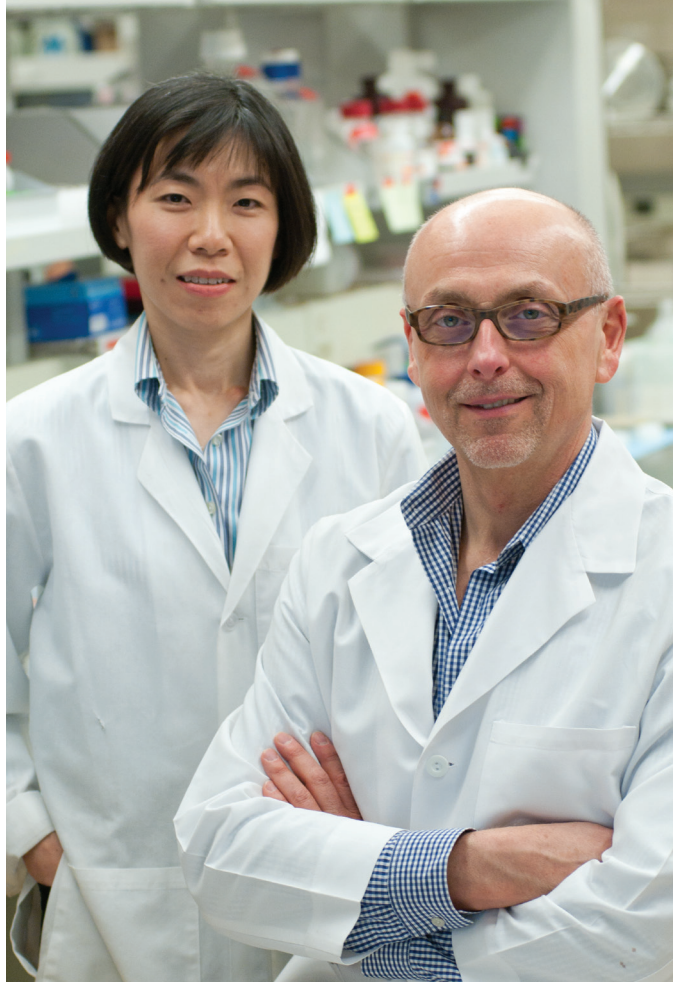
“A vaccine will be the ultimate solution for the epidemic, but I don’t think this would solve all the problems,” said Bukrinsky. “To me, the real solution would be to cure the disease, to make people who have it free of the virus.” To this end, Bukrinsky’s research has focused on the use of therapeutic, not preventative, vaccinations. His lab is working to better understand latently infected cells, which remain in the body throughout a patient’s life and may become active when drug therapy is stopped.

In addition to his administrative responsibilities as acting chair, there is Bukrinsky’s work with the D.C. D-CFAR, where he directs two of the five “cores” that provide support for HIV-related research in Washington. He is in charge of the developmental and basic science cores; the other three include administrative, clinical and behavioral science, and prevention and biostatistics. He has noted a shortage of HIV/AIDS researchers doing basic science work and said, “this is an area we need to develop in order to support the other research studies [and] the only way to accomplish that is to attract new people, especially young investigators.”

For Bukrinsky, that “next generation” begins at home. His youngest daughter is in high school, his oldest daughter is a lawyer in Virginia, and his son just started medical school in Grenada. Not surprisingly, his wife, Tatiana Pushkarsky, is a research scientist in his department at SMHS.

Thinking back to those nights watching his parents read scientific journals at home, Bukrinsky sees the same sense of excitement and discovery in the young researchers he’s mentored. He doesn’t regret his decision to “escape,” as he has put it. “If I had stayed in Russia, I’d still be a scientist, but I wouldn’t be able to do what I’ve achieved here,” he said. “I know I did the right thing.”

For more information about Michael Bukrinsky, M.D., Ph.D., visit www.gwumc.edu/bukrinsky. ■



Matter Over Mind

RESEARCHERS IDENTIFY GENE INVOLVED
IN WHITE MATTER DEVELOPMENT



By Anna Miller

At first, Li-Jin Chew, Ph.D., research assistant professor of Pediatrics at the George Washington University School of Medicine and Health Sciences (SMHS), and Vittorio Gallo, Ph.D., professor of Pediatrics and of Pharmacology and Physiology at SMHS, were in the dark.

Their eight-year venture to better understand how the brain makes and repairs myelin — a coating that insulates the axons of neurons and that, as a whole, is referred to as white matter — began slowly with little funding and few clues.

“At the beginning, there were many reasons we were crawling,” admits Chew, who is an investigator at the Center for Neuroscience Research at the Children’s Research Institute at Children’s National Medical Center (Children’s National), where Gallo is director and Wolf-Pack Chair in Neuroscience.

A break in the clouds came during an early screen, when the lab found that a gene called Sox17 was being regulated during myelination, or the formation of white matter. Although pinpointing this gene was no minor accomplishment (the finding was published in *The Journal of Neuroscience* in

2006), it left questions unanswered. What function did Sox17 have, and how does it work?

The researchers knew the answer wouldn’t come easy. The gene, which resides in many types of cells and is expressed only weakly and temporarily in developing white matter, is inherently difficult to study.

But recently, the Chew-Gallo team reached a major turning point in their research. In a study published online in the September 2011 edition of *The Journal of Neuroscience*, they identified Sox17 as a gene that helps direct immature brain cells (called oligodendrocyte progenitor cells) to mature and generate myelin through its regulation of the Wnt/beta-catenin signaling pathway, a major pathway implicated in white matter development and in some forms of brain cancer. A glitch in these signals can result in mental retardation, developmental disabilities, and diseases of adult white matter such as multiple sclerosis.

“We were very excited because we were beginning to get a coherent picture of the interplay between these molecular mechanisms and the pathways that regulate oligodendrocyte development,” says Gallo. “The more we understand molecular mechanisms, the more we open our possibilities to target them with specific drugs.”

While the development of oligodendrocytes is studied widely, Chew and Gallo’s team is the only group to study Sox17’s role in this process. They are working toward renewing the NIH grant they were awarded five years ago, and are collaborating with researchers in France on a project funded by the National Multiple Sclerosis Society.

“We are very interested in expanding this study to understand the relevance of this gene in human cells and pathology,” says Gallo.

The success of the Chew-Gallo lab — which has trained top researchers in white matter development, including Jiho Sohn, Ph.D., who led the 2006 study as a GW graduate student and is now studying myelination as a postdoctoral fellow at the University of California, Davis, and Shibeshih Belachew, M.D., Ph.D., an initiator of the first screen who has since established the largest center for multiple sclerosis research and clinical care in Belgium — is attributable to teamwork and the robust environment for neuroscience research at Children’s National and at GW, home of the GW Institute for Neuroscience, they say.

“I think this study really exemplifies what we are all doing at GW and Children’s National,” says Gallo. “We are identifying mechanisms that might be used to manage abnormalities in disease.”

For more information about the Center for Neuroscience Research at Children’s National, visit www.childrensnational.org/research/OurResearch/centers/neuroscience/default.aspx. ■



Rep. Donna Christensen, M.D. '70

Where Opportunities Lead

Rep. Donna Christensen, M.D. '70, Follows the Path from St. Croix to Capitol Hill



By Thomas Kohout

Donna Christensen, M.D. '70, never intended to go into medicine. When her father, a former United States Attorney and Judge in the U.S. Virgin Islands, suggested she consider a career as a physician, the strong-willed island-girl from St. Croix wouldn't hear of it. Although she says she was always interested in science and biology, becoming a doctor was a decision that came later. Christensen never intended to go into politics either, but somehow a series of influential moments ultimately led her to GW's School of Medicine and Health Sciences (SMHS). From there Christensen developed a successful career in family practice, became the first female physician to serve in the House of Representatives, and most recently, Christensen will serve as the keynote speaker at her alma mater's graduation ceremony on May 20.

Medicine came to Christensen in the midst of her sophomore year at Indiana's St. Mary's College, where she was studying biology. "I picked up some pamphlets about the need for African American doctors for a friend of mine," admits Christensen. Fortunately, she decided to read them first, before sending them along. "After that I knew I wanted to go into medicine. I was probably heading that way all along, but I didn't want to my father to think that he had been right."

Her introduction to SMHS came a short time later, when her father was a patient at GW Hospital. While her father was there for eye surgery, Christensen was busy grilling his doctor about GW's medical program. Based on the doctor's candor and his recommendation, Christensen chose GW.

"I was scared to death when I came," she says, adding "but GW had a very different atmosphere. All of the faculty

told us, 'You've made it. We expect you all to graduate, and our doors are always open if you need any help.' That made all the difference."

Washington, D.C., in the late 1960s was a good fit as well. Vibrant and enticing, Vietnam war protestors and civil rights marchers filled the city's streets. Christensen and a cadre of classmates spent their free time studying or just unwinding at the P Street Beach near her Dupont Circle apartment, and often found themselves at the center of everything.

She was a second-year student in 1968 when Martin Luther King was assassinated. When the news broke, some of her classmates thought that Christensen should leave the city for her own safety. "We were a close-knit group and looked out for each other. They were worried about me; afraid the city might not be safe.

"I said, 'No, it's safe,' " recalls Christensen, but she ended up spending the weekend alone, watching from the rooftop of her apartment building as National Guard troops patrolled the streets below and the city burned.



Donna Christensen, M.D. '70, (at left facing the camera) relaxing with classmates on the P Street Beach.

Just a month later, events in Washington would prove even more pivotal for Christensen. The District was the site of the Poor People's Campaign. Billed as the second phase of King's civil rights campaign, the event aimed to promote an anti-poverty agenda that included housing, health care, and economic assistance for America's poor. In May 1968, thousands of demonstrators descended upon the National Mall and hastily built a shantytown known as "Resurrection City."

Rather than spending those days studying for her boards,

Christensen instead volunteered in the medical van during the two-week campaign. She cared for the demonstrators who came from all over the country, most of whom came from the rural South, and the experience had a lasting effect.

"I was just finishing my second year at the time," she explains. "It was raining and muddy, and very difficult for everyone. That experience is why I'm serving in Congress today. It wasn't a direct connection, but as I look back on it, I think it set a direction for me."

Over more than two decades as a family practitioner, Christensen served in clinics and hospitals throughout St. Croix, eventually became acting Commissioner of Health. From there her political life began. In 1996, after a contentious campaign against Victor Frazer, Christensen won the first of seven consecutive elections to represent the U.S. Virgin Islands, a tiny Caribbean territory just east of Puerto Rico.

Despite her status as a non-voting member (territories are not permitted to vote on legislation), Christensen has found an avenue to represent her constituents: committee work.

Currently she serves on the influential House Committee on Energy and Commerce, which has a hand in just about every issue that comes before Congress. When she first arrived on Capitol Hill, Christensen found willing mentors in Maxine Waters (D-Calif.) and Louis Stokes (D-Ohio), who started the Congressional Black Caucus' Health Brain Trust.

When Stokes retired, Christensen was tapped to fill his place as chair of the Health Brain Trust. That opportunity provided Christensen with a platform to address health issues. It also led to a seat on the health subcommittee and a major role in health care reform legislation. Christensen and her staff began crafting benchmarks for the legislation, forming a coalition with the Hispanic and Asian caucuses to identify some "non-negotiable" items — such as data collection by race, ethnicity, and other socio-economic factors — that the groups felt were an essential part of any health care reform law.

The result is a law Christensen believes is a landmark piece of legislation as significant as anything Congress has crafted in generations.

In May, when Christensen addresses the graduating medical students, she will encourage them to celebrate their accomplishments and embrace unique opportunities that arise. As in Christensen's career, it is not always predictable where these opportunities will lead, however, they can serve as a guide to great things.

For more information about how to get involved at GW visit www.gwumc.edu/getinvolved. ■



Action Unlimited

RIISING FOURTH-YEAR DANIEL O'NEILL BALANCES HIV ACTIVISM WITH LIFE AS AN M.D./M.P.H. DEGREE STUDENT

By Steve Goldstein

Hurrying into a Dupont Circle sandwich shop during a break in his preceptorship at a private practice specializing in HIV patients, Daniel O'Neill wolfed down his lunch and prepared for his busy afternoon. A type 1 diabetic since he was 13, the rising fourth-year student at the George Washington University School of Medicine and Health Sciences (SMHS) is aware that controlling his blood sugar is the only way he can manage his extremely active

schedule as an activist, HIV awareness campaigner, and M.D./M.P.H. degree student.

In 2011, O'Neill, 30, was one of 34 scholars, chosen from 2,000 applicants, to receive a scholarship from Point Foundation, the nation's largest scholarship-granting organization for lesbian, gay, bisexual, and transgender (LGBT) students of merit. Jeffrey S. Akman, M.D. '81, G.M.E. '85, interim vice president for Health Affairs and dean of SMHS, said O'Neill "is a great example of the kind of citizen-leader that the school is proud to support."

O'Neill graduated with degrees in Biology and Dance from Indiana University, where he also received a fellowship to obtain his M.B.A. in Biotechnology Enterprise. Upon moving to the area, he co-founded the HIV Prevention

Daniel O'Neill plans to pursue a residency in Washington, D.C. or possibly San Francisco, where he will continue to work on HIV/AIDS and other public health issues for the benefit of the underserved and the LGBT community.

Working Group of the Washington, D.C. LGBT Center, as well as an organization that distributes safer-sex kits. He is a recipient of the Unsung Hero Award from Caron Treatment Centers, a nationally recognized non-profit provider of alcohol and drug addiction treatment, and won a National Health Service Corps scholarship. And in between his studies and his work with the HIV Prevention Group, he sings with the Gay Men's Chorus of Washington, D.C.

O'Neill, whose father is a cardiothoracic surgeon, became interested in medicine at a young age. Later on, he came to understand the parallels between HIV and diabetes, both chronic diseases that last a lifetime.

O'Neill said that his diabetes forces him to be as regimented as possible with his busy daily schedule. It's also inspired him to pursue a career in outpatient care, as opposed to a field like surgery, that's subject to more unpredictable demands.

He plans to pursue a residency in Washington, D.C. or possibly San Francisco, where he will continue working on HIV/AIDS and other public health issues. Above all, he said, "I want to work with the underserved and the LGBT community." ■



Lead Runner

RESIDENT MARY TANSKI KEEPS ONE STEP AHEAD OF THE NEXT EMERGENCY

By Steve Goldstein

Emergency medicine is unpredictable. Emergency medicine at the George Washington University Hospital is *really* unpredictable, as third-year resident Mary Tanski, M.D., discovered.

"You never know who or what's going to come through the door," she said during a break from the rigorous pace. "You get to treat patients from all walks of life, with every disease process. In one bed there might be a VIP and in the next there might be a person from a medically underserved community. It keeps it interesting."

The Detroit-area native and graduate of Michigan State University and Wayne State University School of Medicine always seems to be on her toes, whether she's treating patients or representing her fellow residents on various committees.

Tanski is one of two co-chairs of the Residents Committee, which is responsible for bringing residents' concerns to the attention of the administration. And, as the residents' representative on the Medical Executive Committee, she is also charged with presenting these concerns to the committee of attending physicians and board members. "It's very

As of July, Mary Tanski, M.D., will be one of three chief residents for the Emergency Department, in charge of everything from residents' schedules to new intern orientation.

interesting to hear about long-term plans at the hospital. My participation in the meetings gives the residents a voice in discussions about the future of GW Medicine," she said.

As of July 1, Tanski will be one of three chief residents for the Emergency Department. The chief residents are in charge of everything from residents' schedules to new intern orientation and social activities.

According to Robert Shesser, M.D., chair of the Department of Emergency Medicine in GW's School of Medicine and Health Sciences, Tanski "was the unanimous choice of the faculty and her peers to be one of our chief residents. She has become an excellent clinician who communicates well with patients, nurses, and physicians and has demonstrated excellent administrative and problem solving skills."

The stress of emergency medicine has never been too much for Tanski, whose devotion to running helps keep her both sane and slim. "If you're working with a good team, it makes it all manageable," she added.

Tanski has envisioned her life as a physician since she was in seventh grade, when she wrote a report on Ben Carson, M.D., a fellow Michigan native and an internationally renowned neurosurgeon. "His story was so inspiring. From that moment, I knew I wanted to do this," she said.

Her dedication hasn't strayed since. Following her residency, Tanski is aiming for an administrative fellowship. "I'm really concerned about quality improvement and patient satisfaction," she said. "It's definitely my career path."

Shesser hopes that path will also include positions of leadership.

"I sincerely hope that she chooses academic medicine as a career because she has the potential to make a tremendous impact on future generations of physicians," he said. ■



John and Katherine Pan

Well Integrated in Health

JOHN AND KATHERINE PAN TURN A LONG-STANDING ASSOCIATION WITH GW'S SCHOOL OF MEDICINE AND HEALTH SCIENCES INTO A MAJOR COMMITMENT



By Thomas Kohout

With a connection to the GW medical community spanning more than 30 years, it's safe to say that John and Katherine Pan, and their family, are deeply entwined in the George Washington University community. John graduated from the GW School of Medicine and Health Sciences (SMHS) in 1970, and completed his residency in Obstetrics and Gynecology in 1974; and Katherine earned her master's degree in Economics at GW in 1976.

Their son Eric and his wife, Krista, are also part of GW; as Eric earned his M.D. at SMHS in 2009, and now he's in his second year of residency at GW; and Krista is currently pursuing a master's degree in Education.

For many years following the completion of his residency at GW, John ran a private practice as an OB/GYN. In 1995, he brought his practice to the GW Medical Faculty Associates and taught GW medical students the important skills needed to be a successful gynecologist.

However, in 1998, John took a leap of faith and refocused his career on Integrative Medicine, at a time when the discipline was hardly an accepted practice. With support from SMHS, he launched The Center for Integrative Medicine.

The principles of Integrative Health are based on establishing a healing environment where complementary and alternative therapies partner with conventional medical practice to promote healing and wellness. The idea is to develop a care plan tailored to fit each patient's needs, honor the personal healing process, and treat the patient as a whole, addressing the root cause of disease as well as the symptoms. John's Center has been a part of the research and education at SMHS since it was established, and Integrative Medicine has been a popular discipline available through SMHS's track program offered by the Office of Student Opportunities. The track program enables students to move beyond the core curriculum to emphasize one of nine available elective paths.

"My goal is not to have a specific department or some stand-alone entity called Integrative Health," explains John. "I think the principle of the practice is that it's integrated through the health education system." The idea, adds John, would be to incorporate aspects of Integrative Health across multiple disciplines in Medicine and Health Sciences.

In April, he accepted an invitation to become a member of the Dean's Council for SMHS, a key advisory and leadership body for the school. John is working with SMHS to create an academic home for Integrative Health, as it is currently based in the Center for Integrative Medicine, which is an independent private practice located in Foggy Bottom.

continued on page 36

Wartofsky Receives GW Alumni Achievement Award

Leonard Wartofsky, M.D., M.P.H., a four-time GW alumnus, was among those to receive the 75th Annual GW Alumni Achievement Award during Alumni Weekend 2011. The awards are the highest form of recognition that the University and the GW Alumni Association bestow upon alumni each year.

A thyroid cancer expert, Wartofsky earned his B.S. from GW in 1959, a well as an M.S. in 1961, an M.D. in 1964, and an M.P.H. in 1995. He currently serves as the chair of the department of Medicine at the Washington Hospital Center. In addition, he holds faculty appointments at GW, Georgetown University, Howard University, the University of Maryland, and the Uniformed Health Services in Bethesda, Md.

"Throughout his long and distinguished career in medicine, Leonard has embodied the great traditions and most important values of our school, as well as those of the medical profession," said Jeffrey S. Akman, M.D., '81, G.M.E. '85, interim vice president for Health Affairs and dean of the GW School of Medicine and Health Sciences. "He is a brilliant physician and scientist who has been at the top of his field for many years, and I can think of no one who is more deserving of this award." ■

Global Service

Christopher L. Barley, M.D. '93, was one of five George Washington University alumni to receive the 51st Annual Alumni Outstanding Service Award. The Alumni Outstanding Service Award is given to alumni who advance the mission of the university through dedicated volunteerism in support of its programs, thereby ensuring the university's impact on our community and future generations of students.

Barley is a member of the School of Medicine and Health Sciences (SMHS) Dean's Council and was instrumental in establishing the SMHS Young Alumni group in New York City — the school's first alumni group of its kind.

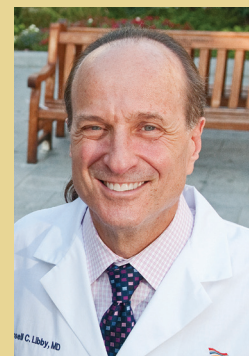
He is a vice president of Citta, a not-for-profit organization that builds and maintains hospitals and schools in rural areas of India, Nepal, and Mexico. In this role, Barley oversees the delivery of health care and education to underserved communities. He also serves as a Diplomat of the American Board of Internal Medicine.

Barley's Internal Medicine practice in Manhattan, N.Y., focuses on travel medicine as well as the prevention and early detection of diseases such as cancer and heart disease. ■

GW Alumnus Named President-Elect of Medical Society of Virginia



Russell C. Libby, M.D. '79, B.S. '74, F.A.A.P., began his term as president-elect of the Medical Society of Virginia, a professional association serving Virginia physicians since 1824, in fall 2011.



Libby is founder, president, and medical director of Virginia Pediatric Group, Ltd. in Fairfax, Va., serves as chief of the general medicine section of Inova Fairfax Hospital for Children, and sits on the board of directors of the American Academy of Home Care Physicians.

In addition to his clinical work, Libby helped establish the GW School of Medicine and Health Sciences' Adopt-A-Doc program, through which alumni can support an incoming medical student's education with a minimum gift of \$20,000 over four years. For information about giving opportunities such as Adopt-A-Doc, visit smhs.gwu.edu/connect/smhsGivingopportunities.cfm.

"For more than 30 years, Russell Libby has been a committed physician and a dedicated member of the SMHS alumni community," said Jeffrey S. Akman, M.D. '81, G.M.E. '85, interim vice president for Health Affairs and dean of the GW School of Medicine and Health Sciences.

He also has been recognized as the best pediatrician in the Washington metropolitan area by *Families Magazine*, listed as one of best physicians by *Washington Consumer Checkbook*, as a Top Doctor by *Washingtonian Magazine*, and as one of the 100 top physicians in the Washington metropolitan area by *Northern Virginia Magazine*. ■

CLASS NOTES

1950s

MEMBERS OF THE CLASS OF 1954 gathered in downtown Washington, D.C. during Alumni Weekend on Sept. 17, 2011, for an afternoon of reminiscing and reconnecting. In attendance were: Solomon Barr, M.D.; Milton Boyd, M.D.; Robert Bullock, M.D.; Martin Davis, M.D.; Albert Modlin, M.D.; and Ruth Oartel, M.D.

1960s

STEPHEN H. MANDY, M.D. '66, was appointed to the Board of Directors for the American Academy of Dermatology, and will serve through 2016. He also serves on the board of the American Society of Dermatologic Surgery.

DONALD BERNSTEIN, M.D. '68, recently retired after 39 years practicing anesthesiology to become a senior scientist with

Sotera Wireless, where he is working to develop rapid response monitoring devices.

1970s

PETER C. FREIS JR., M.D. '70, was selected as one of New Jersey's best physicians by N.J. Top Docs in January 2012.

MARC A. MUGMON, M.D. '73, was recently elected Governor of the Maryland chapter of the American College of Cardiology.

MICHAEL E. CAIN, M.D. '75, was recently appointed to serve as the vice president for health sciences at the School of Medicine and Biomedical Sciences at the University of Buffalo. Cain has served as the school's dean since 2006.

BRUCE E. RUBIN, M.D., G.M.E. '77, serves on the executive board for the Maryland Radiologic Society and the Washington, D.C. Metropolitan Radiologic Society.

1980s


ROBIN J. HAMILL-RUTH, M.D. '80, associate professor of Anesthesiology and Critical Care Medicine, and director, Clinical Pain Research, at the University of Virginia Medical Center was named president-elect of the American Board of Pain Medicine in February 2012. Previously she served on the Board as Credentials Director. She will serve as president-elect from 2012–14, and then she will become president for the 2014–16 term.

RICHARD KOVAR, M.D. '80, was named 2012 Family Physician of the Year by

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the American Academy of Family Physicians. The award honors outstanding family physicians who provide patients with compassionate and comprehensive care.

MICHAEL J. VENDRELL, M.D., G.M.E. '80, recently founded Ikonopedia, LLC. The company offers image-driven reporting and an encyclopedia of breast imaging.

JERRY OSHEROFF, M.D. '86, Clinical Decision Support academic at the University of Pennsylvania Health System, recently launched an independent consulting firm, TMIT Consulting, LLC. The firm specializes in synthesizing, disseminating, and implementing best-practices for improving health care outcomes. In 2009, Osheroff was the lead author of the award-winning resource guide,

Improving Outcomes with Clinical Decision Support: An Implementer's Guide.

JEFFREY FISCHGRUND, M.D. '87, was selected to serve on the Board of Directors for TranS1 Inc., a medical device company focused on designing, developing, and marketing spine products to treat degenerative conditions. Fischgrund currently serves as professor of Orthopaedic Surgery at The Oakland University School of Medicine, at William Beaumont Hospital in Royal Oak, Mich. A board certified orthopaedic spine surgeon with more than 20 years of experience, Fischgrund has served as the Editor-in-Chief of the *Journal of the American Academy of Orthopaedic Surgeons* since 2009.

STUART S. KAPLAN, M.D. '88, G.M.E. '89, was recently elected as a Fellow of the American College of Radiology.

1990s

STEVEN A. ROBICSEK, M.D. '95, PH.D., clinical associate professor of Anesthesiology, director of Medical Student Anesthesia Electives at University of Florida College of Medicine, is concluding a two-year RO1 grant from the National Institute of Neurological Disorders and Stroke for his research "Neuronal Biomarkers in Severe Traumatic Brain Injury."

MICHAEL R. YOCHELSON, M.D. '95, was appointed vice president of Medical Affairs and Chief Medical Officer for the MedStar National Rehabilitation Network in July 2011. He also recently

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go.gwu.edu/plannedgiving

completed his M.B.A. at the University of Maryland, R.H. Smith School of Business. Yochelson has also been recognized among the “Top Docs” serving Northern Virginia in 2010 and 2011.

ALEX J. MECHABER, M.D., G.M.E. '97, was recently appointed senior associate dean for Undergraduate Medical Education at the Miller School of Medicine at the University of Miami.

2000S

JOHN YARBROUGH, M.D. '04, M.B.A., joined the hospital medical staff at St. Joseph's Behavioral Health Center. Yarbrough, received the America's Top Psychiatrists Award from the

Consumers' Research Council of America twice, and has a special interest in the treatment of abusive parents with mental illness.

MARK J. FAVOT, M.D. '08, will begin his new position as assistant clinical professor and director of Emergency Ultrasound at Sinai-Grace Hospital, Wayne State University School of Medicine, in July 2012.

JENNIFER S. JACKSON, M.D. '08, will complete her Emergency Medicine residency at Yale University School of Medicine/Yale-New Haven Medical Center in June 2012.

FRANCES SESSLER, M.S. '09, has been named the National Dean for the

Remington College of Nursing in Orlando, Fla., where she is developing a new occupational therapy assistant program and teaching an online research methods course.

ERIC M. THOMSON, M.D. '09, was accepted to the Virginia Commonwealth University's Fairfax Family Practice Sports Medicine Fellowship.

JOSEPHINE SCHLOESSER, B.S. '10, received the 2011 VISTA Award for Teamwork from the American College of Radiology Imaging Network, for her work on the RESCUE: Randomized Evaluation of Patients with Stable Angina Comparing Utilization of Diagnostic Examinations Trial.

In Memoriam

F. ELWOOD DAVIS, J.D. '43, died from complications from pneumonia, Jan. 17, 2012. He was 96 years old. A former University trustee, GW Presidential Medal recipient, and Chair of the Walter A. Bloedorn Foundation (named after a former dean of the School of Medicine and Health Sciences), Davis donated more than \$2 million to GW and the GW Medical Center since the late 1970s. Davis earned his law degree at GW in 1943 before becoming an ensign in the U.S. Navy and serving in the Pacific Theater during World War II. Following his service, Davis worked for Riggs National Bank and later co-founded the law firm of Reasoner, Davis, and Vinson. He was general counsel to GW and was noted for his work to gain home rule for Washington, D.C. In 2002, an endowment from the Davis family established the F. Elwood and Eleanor Davis Endowed Professorship at the GW Law School. Davis' wife of 66 years, Louise Grunwell Davis, died in 2009. He leaves three children, Robert Davis, Anne Spratt, and Lynne Whitley; and six grandchildren.

In Memoriam

Alumni

PATRICK C. DIETLER JR., M.D. '48
JOHN A. DOLAN, M.D. '61
O. HERMAN DRESKIN, M.D. '41
LALA M. DUNBAR, M.D., PH.D. '78
JOHN L. FORD, M.D. '65
GEORGE M. HENNEBERGER, M.D. '58
MELISSA A. HYNES, M.D. '02
JOHN E. KELLY, M.D. '59
ROBERT L. LARSON, M.D. '53
CLINTON J. MCGREW, M.D. '55
ERNEST C. MCKIBBEN, M.D. '45
JOHN G. MONYAK, M.D. '52
MATTHEW D. PARRISH, M.D. '50
JULIUS PIVER, M.D. '52,
RULON D. ROBISON, M.D. '59
STANLEY B. ROSENDORF, M.D. '53
JOHN L. SIDDOWAY, M.D. '46
GEORGE A. SOLACK, M.D. '60
CHARLES A. STUMP, M.D. '52
CARLTON E. SWETT, M.D. '54
NEVILLE I. THROCKMORTON, M.D. '48
CLIFFORD L. WALKER, M.D. '45
ELIZABETH ANN ZIMMERMAN, M.D. '91

New job? Publication? Change of address?

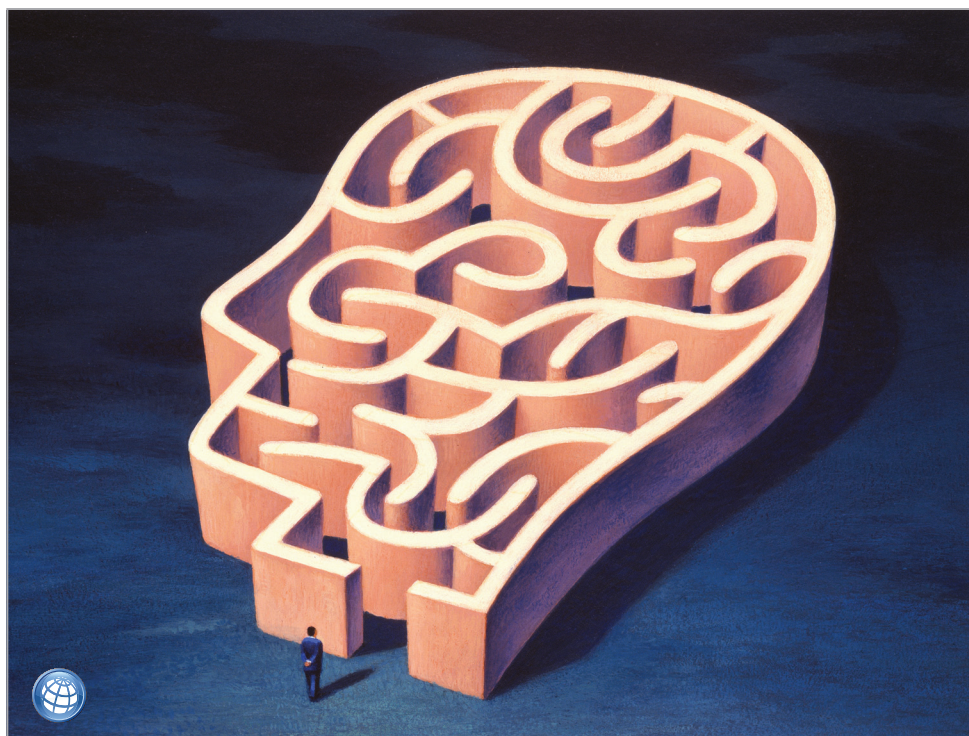
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Please send your updates to smhsalumni@gwu.edu

or call (202) 994-7511

or visit www.gwumc.edu/alumni-update





Exploring Molecular Mechanisms to Predict Neurological and Psychiatric Diseases

Anthony-Samuel LaMantia, Ph.D., professor in the Department of Pharmacology and Physiology, and director of the GW Institute for Neuroscience in the School of Medicine and Health Sciences received a five-year, \$1.6 million grant from the National Institutes of Health to identify molecular mechanisms that define embryonic olfactory epithelium (OE) stem cells. These stem cells, once established in the developing nose, regulate lifelong genesis of olfactory receptor neurons — the cells that mediate the sense of smell — and are likely pathogenic targets for neurological and psychiatric diseases, including Parkinson's and Alzheimer's diseases as well as schizophrenia.

"Olfactory epithelial stem cells are the only neural stem cells in humans that constantly make new neurons that make new connections over a lifetime," explains LaMantia. "If we

can understand how the nervous system establishes stem cells that can provide for ongoing replacement and repair, we will be able to create an outline of how one might harness the same mechanisms to repair parts of the brain that do not normally regenerate or recover after damage."

Stem cells in the embryonic vertebrate olfactory epithelium generate critical peripheral chemosensory and central neuroendocrine neurons essential for feeding, social interactions, and reproduction. LaMantia and his colleagues defined these stem cells over the past several years. Nevertheless, the mechanisms for establishing and maintaining these olfactory epithelial stem cells remain unknown. Now, GW researchers led by LaMantia will define molecular mechanisms that are in the network of genes that are essential for defining OE stem cell identity and their ability to make the mature neurons that ensure one's sense of smell.

To learn more about the work of the GW Institute for Neuroscience, visit www.gwumc.edu/neuroscience. ■

Vascular Disease Foundation President's Award Goes to Sidawy

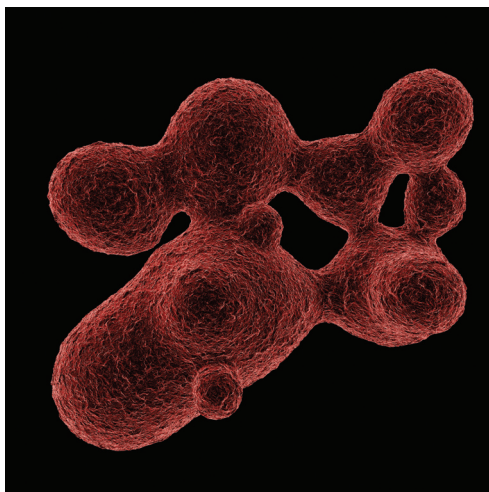
Anton Sidawy, M.D., M.P.H. '99, professor of Surgery in the GW School of Medicine and Health Sciences (SMHS), and chair of the Department of Surgery at the GW Medical Faculty Associates, received the Vascular Disease Foundation's (VDF) President's Award for Leadership. The award was presented at the foundation's eighth annual meeting in Washington, D.C. in September 2011. The President's Award for Leadership honors Sidawy's commitment to the foundation's mission of increasing awareness of vascular disease and improving vascular health.

"We are pleased that Dr. Sidawy has been recognized by the Vascular Disease Foundation for his leadership and commitment to improving awareness of vascular disease," said Jeffrey S. Akman, M.D. '81, G.M.E. '85, interim vice president for Health Affairs and dean of SMHS. "As an academic and a mentor for the next generation of medical professionals, Dr. Sidawy's efforts educating students, physicians, and the public about the risks, prevention and treatment of vascular disease are remarkable."

In addition to his academic and clinical responsibilities at GW, Sidawy serves as the editor-in-chief of the *Journal of Vascular Surgery* and is a former president of the Society for Vascular Surgery. Sidawy has been a member of the board of directors of VDF since 2003 and served as its president from 2006 to 2010. ■

Unique Training Program in Transfusion Medicine and Hematology Established

Naomi L. C. Luban, M.D., professor of Pediatrics at GW's School of Medicine and Health Sciences (SMHS), and division chief of Laboratory Medicine, Hematology, at Children's National Medical Center (Children's National), and Lori Luchtman-Jones, M.D., associate professor of Pediatrics, SMHS, and division chief, Hematology, at Children's National, have secured funding from the National Heart, Lung, and Blood Institute at the National Institutes of Health (NIH) for a new pediatric transfusion medicine and hematology research program with the Children's Research Institute at Children's National. The program will prepare candidates for academic leadership and research careers.



The program, the Pediatric Hematology and Transfusion Medicine Multidisciplinary Research Training Award, will pair faculty and resources from SMHS, NIH, the American Red Cross, the U.S. Food and Drug Administration, and Howard University School of Medicine in an attempt to close a gap in the number of researchers and pediatric subspecialists in hematology and transfusion medicine.

The program is designed to encourage diversity among trainees and will draw upon the strengths of the partnering organizations, including a wide range of senior mentors, as well as an infrastructure to support trainee research from the Clinical and Translational Science Institute at Children's National. ■

GW Pediatrician van den Anker Receives 2012 Distinguished Researcher Award

John N. van den Anker, M.D., Ph.D., professor of Pediatrics, and of Pharmacology and Physiology, was named the Distinguished Researcher of the Year for GW during the 2012 Research Day events. The award is presented annually to honor a member of the faculty for outstanding research achievements as demonstrated by the quality and significance of the faculty member's work and the individual's track record of biomedical, public health, and health services research.

A neonatologist and pharmacologist, van den Anker's research centers on the effects of pain medication in premature infants and directs major NIH clinical pharmacology grants. ■



Congratulations to the 2012 "Golden Apple" Awardees

Congratulations to the 2012 "Golden Apple" awardees. The annual awards recognize the contributions of GW School of Medicine and Health Sciences (SMHS) professors who have made a significant impact on the students' education. SMHS students present the Golden Apples during the Medical School Follies, an annual student talent show.

Each year, first- and second-year medical students nominate their favorite professors, while third- and fourth-year students nominate one resident and one teaching faculty member. The awards are part of the nominating process for the American Medical Student Association's National Golden Apple Award for Teaching Excellence.

This year, first-year students awarded Ron Bohn, Ph.D., associate professor of Anatomy and Cell Biology; second-year students honored David Diemert, M.D., associate research professor of Microbiology, Immunology, and Tropical Medicine, and associate clinical professor of Medicine; third-year students selected Chris Bayner, M.D., a third-year resident in Urology; and fourth-year students awarded Jim Scott, M.D., professor of Emergency Medicine, and of Health Policy, bringing Scott's Golden Apple total to 12. ■

Karcher Named President-Elect of the Association of Pathology Chairs

Donald Karcher, M.D., chair of the Department of Pathology, was chosen to serve as President-Elect of the Association of Pathology Chairs (APC), the preeminent organization of academic departments of pathology in the United States, Canada, and Puerto Rico.

As President of the APC, Karcher will work closely with the leaders of the other major pathology organizations such as the American Board of Pathology, the College of American Pathologists, and the American Society for Clinical Pathology, as well as the Accreditation Council for Graduate Medical Education, Liaison Committee on Medical Education, and the Association of American Medical Colleges. Karcher's term as President-Elect begins in July 2012 and he will become President in 2014. Currently, he serves as Councilor-at-Large.

APC provides leadership and advocacy for the discipline of Pathology and enables academic departments to meet the demands of its three missions — medical education, research, and practice. ■



Physician Advisor Named for the Office of International Medicine Programs

Jeffrey Berger, M.D., M.B.A., assistant professor of Anesthesiology and Critical Care Medicine, has been appointed physician advisor for the Office of International Medicine Programs (IMP). Berger, who also holds a clinical appointment at the GW Medical Faculty Associates, has played an integral part in the development of the anesthesia international residency rotation in Quito, Ecuador. The rotation is the first to be approved by the American Board of Anesthesia — paving the way for other U.S. medical schools to set up similar international rotations.

Berger will work closely with IMP to design and implement education and training programs. He also will provide guidance and resources to faculty, students, staff, visitors, and partner institutions. ■

New Smartphone Software Shows Promise for Diabetes Management

Medicaid provides health care coverage for more than 4 million people with diabetes — a disease that is often difficult for state programs to administer because of high patient turnover and challenges with screening and follow-up.

Given these circumstances, the findings of a demonstration program titled DC HealthConnect are particularly promising.

Richard Katz, M.D., Bloedorn Professor of Medicine at GW's School of Medicine and Health Sciences, director of the Division of Cardiology at GW's Medical Faculty Associates, and chair of the Richard B. and Lynne V. Cheney Cardiovascular Institute, supervised the 12-month cell phone-based research program that followed 32 patients as a part of the Chronic Care Initiative sponsored by the D.C. Department of Health.

The program tested the WellDoc DiabetesManager, a software-based medical device that uses real-time patient coaching to redefine conventional diabetes management for people with Type 2 diabetes.

Katz presented the results at the 2011 mHealth Summit in December and published his findings in the May issue of the *Journal of Health Communications*. According to the study, DiabetesManager reduced ER visits and hospital stays by an average of 58 percent. These findings demonstrate the significant impact that real-time, cell phone-based diabetes management can have on a Medicaid population. ■



Health Sciences' Rising Star

Debra Herrmann, M.S.H.S., M.P.H., P.A.-C., assistant professor of Physician Assistant Studies in the GW School of Medicine and Health Sciences (SMHS), received the 2011 Physician Assistant Education Association (PAEA) Rising Star Award for her contributions in teaching, research, administration, and professional service in the area of Physician Assistant (P.A.) education.

"[Herrmann] is truly deserving of the honor because of her dedication to the educational mission of our program and profession," said Lisa Alexander, Ed.D., P.A.-C., interim chair of Physician Assistants Studies. "Her contributions to the P.A. program include revising the curriculum and directing the rotation for women's health. She is also very dedicated to her students. Debra is truly a valued member of the SMHS faculty."

In addition to her academic role, Herrmann works in the emergency department at Virginia Hospital Center once a week, serves on the Health Sciences Curriculum Committee, and Washington, D.C., Mayor Vincent Gray, B.A. '64, appointed her to chair the P.A. Advisory Committee to the D.C. Medical Board. ■

continued from page 28

This year, John and Katherine generously made a half-million dollar bequest to SMHS, becoming even more deeply enmeshed in the fabric of GW. They have also become members of the University's Heritage Society, which is a select group of alumni, friends, faculty and staff who have supported the institution through significant planned giving contributions.

The Pans say the gift is an expression of appreciation toward an institution that has been such a significant part of both their professional and personal lives.

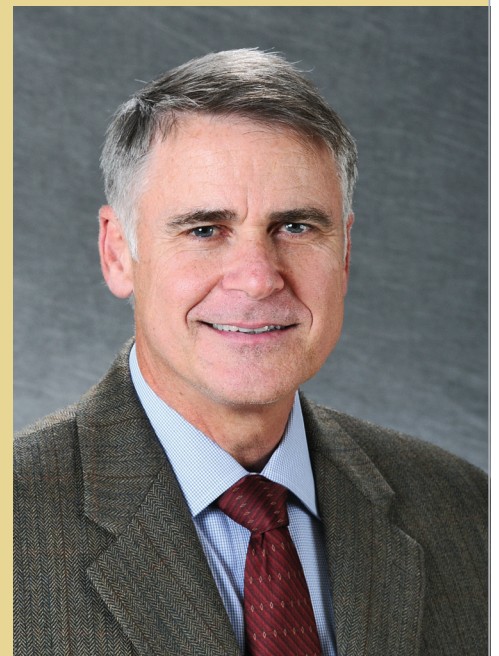
"Our social circles and many of our friends have been from GW because of John's practice here," explains Katherine. "We've been a part of GW throughout our professional lives."

While the Pans didn't specify a goal for their gift, they do hope it will support the principles behind Integrative Health.

To learn more about the Integrative Medicine Track Program at GW SMHS, visit: www.gwumc.edu/trackprogram. ■

New Leadership for Health Sciences

Joseph Bocchino, Ed.D., M.B.A., was named interim senior associate dean of Health Sciences in January 2012. Previously he served as assistant professor and chair of GW's School of Medicine and Health Sciences (SMHS) Department of Clinical Research and Leadership. He also serves as the director of GW's new graduate certificate and Master of Science in Health Sciences (MSHS) in Clinical and Translational Research program, which was developed in partnership with Children's National Medical Center. This program was established and supported by the National Institutes of Health's Clinical and Translational Science Award given to GW and Children's National.



Bocchino has served as an executive in the pharmaceutical and health care industries, as well as in the public and private sectors. His corporate experiences have included: hospital assignments; both domestic markets and global market assignments; responsibilities in pharmaceutical clinical research, manufacturing and marketing environments; medical device development and manufacturing; and oversight responsibilities for regulatory affairs and product registrations. ■



A Heightened Trajectory of GW's Growth



The George Washington University School of Medicine and Health Sciences is forging a dynamic vision for the future. We aim to achieve new heights of excellence in fulfilling our mission of education, research, and patient care. In leveraging the strengths of our close partnerships with the George Washington Medical Faculty Associates and the George Washington University Hospital, we have the elements to attain broader recognition as a great academic medical center.

One fact is clear in surveying the most outstanding academic medical centers across the country: every great institution has great philanthropy. Tuition revenue, insurance reimbursements, and contracts alone will not generate the resources required to achieve excellence. Philanthropy provides the needed funds to support breakthrough research, cutting edge clinical care, and the most modern methods of medical and health science education.

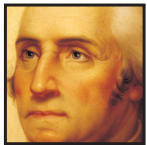
For that reason, the philanthropic support of our alumni, grateful patients, and friends has never had more importance or direct impact on our mission. For example, contributions that

create endowed professorships allow us to retain and recruit leading physician-scientists and educators for our faculty. Donations to establish funds that drive biomedical research, clinical enhancement, technology, and scholarships will heighten the trajectory of GW's growth. Donations to existing funds that support these purposes help us in a similar manner. These examples are a few of the main elements for our development efforts now and in the years ahead.

We invite you to partner with us in taking on these ambitious new goals and in garnering widespread recognition for GW Medicine. We look forward to achieving great success with your help.

DENNIS NARANGO

ASSOCIATE DEAN OF THE SCHOOL OF MEDICINE AND HEALTH SCIENCES AND ASSOCIATE VICE PRESIDENT OF GW MEDICINE DEVELOPMENT AND ALUMNI RELATIONS

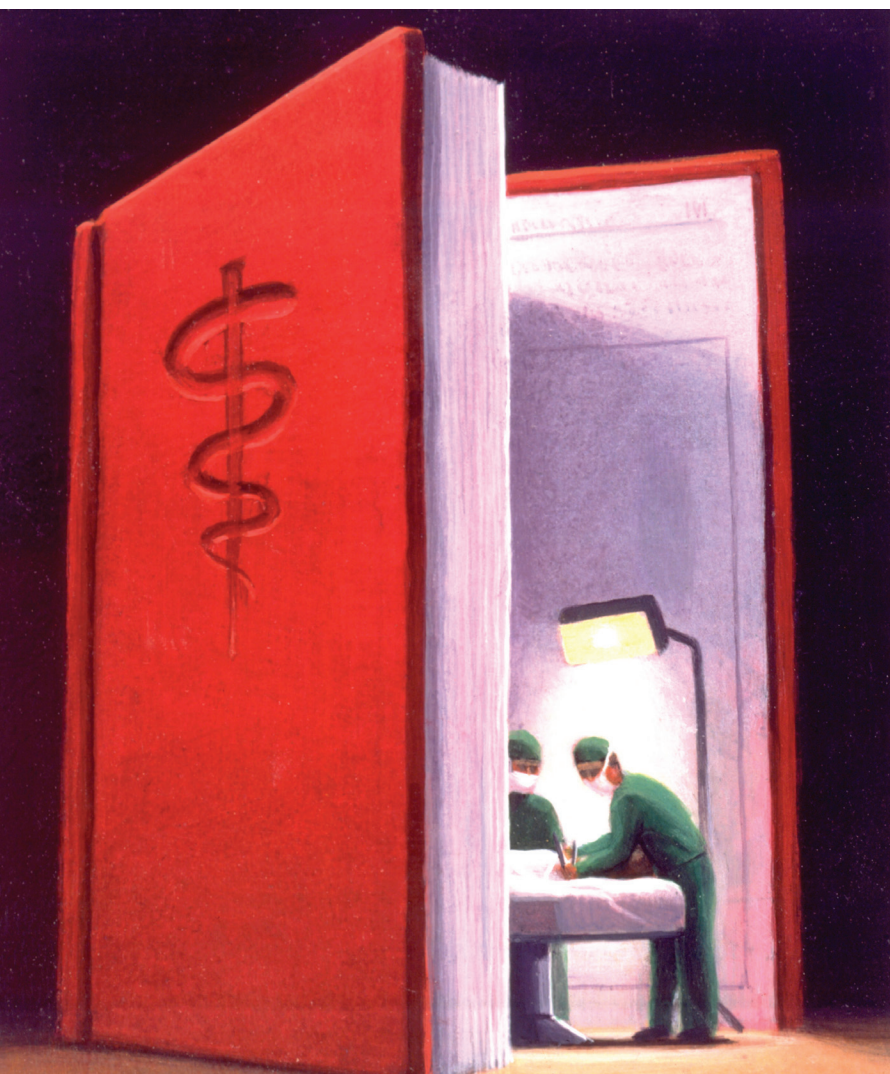


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A Medical Education Makeover

The GW School of Medicine and Health Sciences (SMHS) recently established an ad hoc committee of the Curriculum Oversight Group, to review the school's medical education curriculum, as well as examine the curricula of other medical school. Based on the committee's feedback and recommendations, a new curriculum will be developed for SMHS and is on track to be implemented in fall 2014. [Read More on Page 9](#)